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December 19, 2006

Ms. Raquel Rodriguez
California Energy Commission
Docket Unit, MS-4
1516 Ninth Street
Sacramento, CA 95814-5512

Re: **Pacific Gas & Electric's Gateway Generating Station License Petition Amendment (00-AFC-1C)**

Dear Ms. Rodriguez:

Enclosed for filing with the California Energy Commission are one original and 12 (Twelve) copies of **Pacific Gas & Electric's Gateway Generating Station License Petition Amendment,** (00-AFC-1C).

Sincerely,

Marguerite Cosens

Marguerite Cosens

Final

Pacific Gas and Electric's Gateway Generating Station License Petition Amendment

Prepared for

California Energy Commission

December 2006

CH2MHILL
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Final

Pacific Gas and Electric's Gateway Generating Station License Petition Amendment

Submitted to

California Energy Commission

December 2006

CH2MHILL

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SECTION 1

Introduction

1.1 Background

On January 31, 2000 Mirant Delta, LLC (Mirant) filed an Application for Certification (AFC) with the California Energy Commission (CEC) seeking approval to construct and operate the Contra Costa Power Plant Unit 8 (CC8), a 530 megawatt (MW) nominal combined cycle electric generation facility. The CEC issued a final decision for the CC8 on May 30, 2001. Mirant began construction activities in late 2001 but found it necessary to suspend construction in February 2002 due to several factors.

In June 2005, Mirant and PG&E executed an Asset Transfer Agreement (ATA) to transfer and assign the CC8 assets to PG&E assuming certain conditions were satisfied. On January 13, 2006, Mirant filed a petition with the CEC to amend the CC8 license to extend the construction milestones, make four enhancements to the facility project description, and add Pacific Gas and Electric Company (PG&E) as a joint holder of the license to construct and operate CC8. Mirant's petition was subsequently approved on July 19, 2006.

At the time Mirant filed its Petition, the ATA contemplated sharing of certain facilities and ancillary permits between Mirant and PG&E. Specifically, PG&E would rely on Mirant's authorization to withdraw water from the San Joaquin River to cool the plant. Since the CEC's approval of Mirant's petition on July 19, 2006, Mirant and PG&E have amended certain requirements of the ATA, eliminating the sharing of facilities that would require both Mirant and PG&E to be obligated under the License for compliance with its CC8 License Conditions of Certification.

On November 28, 2006, Mirant and PG&E closed under the ATA and PG&E became the sole owner of the CC8 assets. On December 4, 2006 PG&E filed an amendment with the CEC to request that the Commission enter an order recognizing that Mirant is no longer a joint holder of the CC8 License. In addition to the ownership change, PG&E requested CEC approval of a change in the project name from 'Contra Costa Power Plant Unit 8' to the 'Gateway Generating Station'[1]. For clarify purposes, this Amendment will use the term 'CC8' when referring to the project as previously approved by the CEC in May 2001. The new project name (Gateway) will be used when describing the project as proposed for modification in this Amendment.

1.2 Description of Proposed Amendment

After careful evaluation and a comprehensive review of the project design, PG&E has determined that several changes to the original CC8 project description are necessary, including a new cooling technology which does not involve the use of river water.

[1] Refer To PG&E'S Petition for Minor Amendment to Clarify it is the Sole Owner of the Contra Costa Power Plant Unit 8 and Name Change,' Docket No. 00-AFC-1C, dated December 4, 2006.

Several changes to the project design, which constitute the new Gateway project, are proposed for CEC approval in this Amendment. The major changes are summarized below; more detail on all of the specific project changes is provided in Section 2.1 of this Amendment.

The redesigned Gateway project will:

- Eliminate the use of San Joaquin River water as the cooling water source
- Replace the wet cooling tower system with a dry cooled (air cooled condenser) system
- Relocate various project facilities
- Change the combustion turbine inlet evaporative cooling system to a chilled water system
- Eliminate the use of steam power augmentation
- Include a redesigned closed cycle cooling water system

Based on a review by PG&E's engineers, the proposed design changes will require a slightly larger construction work force and slightly longer construction period (see Section 2.1.7 for more information).

As mentioned above, the amended ATA eliminated the need for Mirant and PG&E to share certain facilities and ancillary permits. As such, PG&E, as sole owner of the Gateway Generating Station, is not obligated to rely on Mirant's authorization to withdraw water directly from the San Joaquin River for cooling water and makeup water supply.

Figure 1-1 presents a revised general arrangement plan for the Gateway project based on the project design changes listed above. The remainder of this Petition to Amend the original CC8 License presents a detailed project description (Section 2), environmental analysis of the proposed project changes (Section 3), proposed modifications to the Conditions of Certification (Section 4), potential effects on the public (Section 5), a list of property owners potentially impacted by the proposed changes (Section 6), and potential effects on the property owners (Section 7).

1.3 Summary of Environmental Impacts

Section 1769 (a)(1)(E) of the CEC Siting Regulations requires that an analysis be conducted that addresses impacts that the modification might have on the environment and proposed measures to mitigate any significant adverse impacts. In addition, Section 1769 (a)(1)(F) of the Siting Regulations requires a discussion of the impacts the modification might have on the project's ability to comply with applicable laws, ordinances, regulations and standards (LORS).

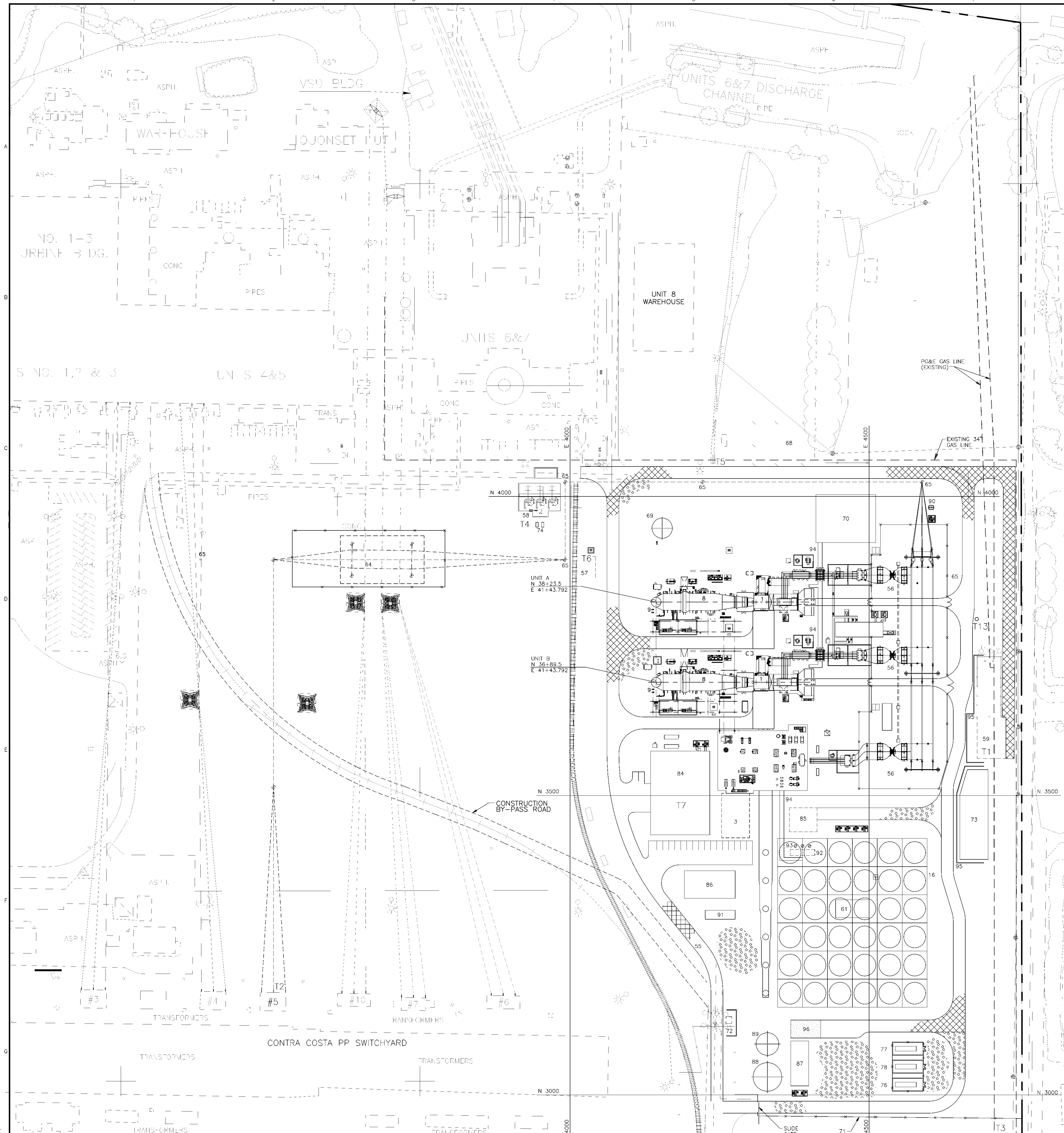
The most significant environmental impact/benefit associated with the Gateway project is the elimination of the San Joaquin River as a water source, whereby aquatic impacts due to impingement/entrainment are avoided and up to 8,300 gallons per minute of river water is not used by the project. Other beneficial impacts include a reduction in air emissions and the need to use and store smaller quantities of hazardous materials due to the elimination of

the wet cooling tower. In addition, visual impacts associated with the presence of vapor plumes from the wet cooling tower will be eliminated.

Section 3 of this Amendment includes detailed analysis of the potential environmental impacts of the proposed project design changes, as well as a discussion of the consistency of the modification with LORS. Section 3 concludes that there will be no significant environmental impacts associated with the Amendment and that the project as amended will comply with applicable LORS.

1.4 Consistency of Amendment with License

Section 1769 (a)(1)(D) of the CEC Siting Regulations requires a discussion of the Amendment's consistency with the LORS and whether the modifications are based upon new information that changes or undermines the assumptions, rationale, findings, or other bases of the final decision. If the project is no longer consistent with the license, an explanation why the modification should be permitted must be provided. In the sections that follow, PG&E will provide an explanation of the proposed modifications, rationale for the modifications, and a LORS compliance analysis. Proposed modifications to the existing Conditions of Certification are included in Section 4.0 and the accompanying appendix.



FACILITIES LEGEND

ID	FACILITY	FOUNDATION	TIEDOWN LOCATION NORTH	TIEDOWN LOCATION EAST	REMARKS
1	COMBUSTION TURBINE	S5011	–	–	SEE DWGS M1011A & M1011B
3	STEAM TURBINE MAINTENANCE AREA	–	–	–	SEE DWG M1021C
8	HEAT RECOVERY STEAM GENERATOR	S5022	–	–	SEE DWGS M1011A & M1011B
9	HRSG EXHAUST STACK	S5022	SEE PLAN	SEE PLAN	SEE DWG M1001A & M1001B
16	AIR COOLED CONDENSER	S5031	–	–	SEE DWG M1021C
55	ACCESS ROAD	S3101 & S3102	–	–	–
56	SWITCHYARD	–	–	–	–
57	OIL/WATER SEPARATOR (EXISTING)	–	–	–	SEE DWGS S3320 & S3321
58	AMMONIA STORAGE TANKS (EXISTING)	–	–	–	–
59	GAS METERING STATION (EXISTING)	–	–	–	–
61	ACC AREA SWITCHGEAR & MCC ENCLOSURE	S5110	–	–	SEE DWG M1001X
64	230KV FLAT LINE AREA	–	–	–	–
65	230KV TUBULAR STEEL POLES	–	–	–	–
68	UNIT 6 & 7 GAS CONDITIONING STATION (EXISTING)	–	–	–	–
69	OIL/WATER SEPARATOR DISCHARGE HOLDING TANK	–	–	–	–
70	CT INLET AIR CHILLER	–	–	–	–
71	SECURITY FENCE (NEW)	S3111	–	–	SEE DWGS S3103,04,07 & S3207
72	GUARDHOUSE (EXISTING)	–	–	–	–
73	UNIT 8 GAS CONDITIONING STATION	–	–	–	–
74	AMMONIA TRANSFER PUMPS	–	–	–	–
76	HYDROGEN BULK STORAGE	LTR	–	–	SEE DWG M1021C
77	CO2 BULK STORAGE	LTR	–	–	SEE DWG M1021C
78	NITROGEN BULK STORAGE TRAILER	LTR	–	–	SEE DWG M1021C
84	ADMIN/PLANT SERVICES BUILDING	S5501	–	–	SEE DWG S1501
85	MOBILE CRANE ACCESS FOR ST MAINTENANCE	–	–	–	–
86	CLOSED CYCLE COOLING WATER HEAT EXCHANGER	–	–	–	–
87	FIRE WATER PUMP ENCLOSURE	–	–	–	–
88	FIRE/SERVICE WATER STORAGE TANK (48'–0" DIA)	–	–	–	–
89	DEMIN WATER STORAGE TANK (38'–0" DIA)	–	–	–	–
90	21 KV SWITCHGEAR	–	–	–	–
91	WET SURFACE AIR COOLER	–	–	–	–
92	CONDENSATE TANK	–	–	–	–
93	CONDENSATE PUMPS	–	–	–	–
94	PIPE RACK	–	–	–	–
95	RETAINING WALL	–	–	–	–
96	MOBILE WATER TREATMENT EQUIPMENT	–	–	–	–

GENERAL LEGEND

ASPHALT PAVING — NEW FENCE
AGGREGATE SURFACING — EXISTING FENCE
CONCRETE

TERMINAL POINTS

T1 FUEL GAS
T2 ELECTRICAL TRANSMISSION
T3 POTABLE WATER (AT WILBUR AVE)
T4 AMMONIA
T5 STORMWATER DISCHARGE
T6 CONSTRUCTION POWER
T7 TELEPHONE
T10 SANITARY (AT WILBUR AVE)
T13 ALTERNATE POWER FEED

NOT TO BE USED FOR CONSTRUCTION

NO	DATE	REVISIONS AND RECORD OF ISSUE	DRN	DES	CHK	PDE	APP
C	12–05–2006	ISSUED FOR INFORMATION	ARB	ARB		DRT	DVW
B	10–26–2006	ISSUED FOR INFORMATION	ARB	ARB		PLN	DVW
A	10–05–2006	ISSUED FOR INFORMATION	ARB	ARB		PLN	DVW

60' 30' 0 60' 120'
1"=60'

I HEREBY CERTIFY THAT THIS DOCUMENT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF CALIFORNIA.
SIGNED
DATE REG NO.

BLACK & VEATCH CORPORATION
ENGINEER DRAWN
CHECKED DATE

PACIFIC GAS & ELECTRIC CO.
GATEWAY GENERATING STATION
SITE ARRANGEMENT
PROJECT RESTART PLAN

PROJECT DRAWING NUMBER 065108–DS–1002 REV C
CODE
AREA

FIGURE 1-1
SITE ARRANGEMENT
PG&E GATEWAY GENERATING STATION
CONTRA COSTA, CALIFORNIA

SOURCE: Black & Veatch Corporation

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SECTION 2

Description of Project Amendment

Consistent with California Energy Commission Siting Regulations, Section 1769 (a)(1)(A) and 1769(a)(1)(B), this section includes a complete description of the project modifications, as well as the necessity for the amendment.

2.1 Project Description Modifications

During the Gateway project acquisition review conducted by PG&E, it was determine that several significant project design features associated with the CEC-approved CC8 project required modifications. The proposed changes to the project design include the following:

- Eliminate the use of San Joaquin River water as the cooling water source
- Replace the 10-cell wet cooling tower and surface condenser with an air cooled condenser (ACC)
- Replace the water treatment building with a trailer mounted water treatment system and relocate the system from the north side of the project site to the south side of the project site
- Revise the discharge source for the oil/water separator
- Incorporate a condensate polishing system associated with the ACC
- Eliminate the use of steam power augmentation
- Replace the combustion turbine inlet evaporative cooling system with inlet chilling systems for each combustion turbine
- Incorporate two electric firewater pumps
- Incorporate a 500,000 gallon fire water storage tank
- Incorporate a new fire water tank fill line and a potable water supply pipeline
- Incorporate a new wastewater/sewer pipeline

These design changes are discussed in greater detail below.

2.1.1 Eliminate Use of San Joaquin River Water

The decision to eliminate the use of the San Joaquin River water as the supply water for the Gateway project was based on several factors, including environmental concerns associated with the use of Delta water to cool the plant, and the desire to eliminate as much future economic uncertainty as possible associated with using surface water for the project. The decision to eliminate the direct use of San Joaquin River water as the cooling water supply source for the Gateway project required redesign of the project to incorporate an alternative

steam cycle cooling system. PG&E evaluated alternative cooling systems, such as wet cooling with another water supply (i.e., recycled water), and use of an air cooled condenser (ACC) system. The results of the evaluation identified the ACC system as the most feasible alternative considering the project's economic and schedule constraints. The primary constraint to the use of recycled water for cooling is the lack of adequate supply without construction of additional collection and treatment facilities. By switching from a wet to a dry cooling system, much of the project's water supply requirements (up to 8,300 gallons per minute (gpm) of San Joaquin River water) are eliminated. Figure 2-1 shows a revised water balance for the project.

2.1.2 Replacement of Wet Cooling with Air Cooling System

A redesigned cooling system consisting of an ACC is being proposed for the Gateway project that will dramatically reduce the amount of water used by the project and will eliminate the direct diversion of river water for power plant use. The expected annual average and maximum daily water for the project are 80.9 million gallons per year with an instantaneous maximum demand of 233 gallons per minute.[2] This is a reduction of approximately 12,975 acre-feet per year from the CC8 project design previously approved by the CEC.[3]

Components of the wet cooling system that will no longer be required and therefore eliminated from the currently approved CC8 project description include the water supply pipeline, wet cooling tower, surface condenser, associated conveyance systems, the cooling tower chemical treatment system, and water treatment system.

New components to support the ACC system include a condensate polishing system, a new water supply source, and a wastewater discharge source. Each of these new components is described in more detail below.

Condensate Polishing System. The condensate polishing system will be located on the condensate pump discharge and will be sized for the full condensate flow. The polisher will be a precoat type using powdered resin applied to a filter element. The polisher will be automatically backwashed based on a preset throughput or a measured differential pressure across the system. All required backwashing equipment will be provided, including a precoat pump, resin prep tank, backwash water sump with pumps, decant tank and air receiver.

New Water Supply Source. Although the project will use an ACC system, the project will continue to need some water for boiler make-up, potable water, and fire water systems. Instead of using water from the San Joaquin River, this water will now be supplied by the City of Antioch or other purveyor. Water demand for the project will be significantly lower than licensed due to replacement of the wet cooling system with an ACC system. The City or other water purveyor will provide approximately 154 gpm versus the 5,000 gpm (annual average basis) that would have been supplied from the San Joaquin River for the original CC8 wet cooling system. A new water pipeline will be constructed to connect to the City of Antioch's municipal water system to supply water for the Gateway ACC system, as shown

[2] Based on a 100 ºF ambient air temperature with duct burner firing. Annual average water use based on 154 gpm and 8,760 hours per year operation.

[3] Based on 5,000 gallons per minute of cooling tower water consumption (annual average).

on Figure 2-2. The new pipeline will exit the project site on the southern fence line and proceed south to the existing 10 inch water main located approximately 10 to 20 feet south of the project's southern fence line.

Wastewater Discharge. Wastewater from the Gateway project will be discharged to Delta Diablo Sanitation District's (DDSD) lift station located on Bridgehead Road via a new 3,000-foot long wastewater discharge pipeline (see Figure 2-2). This new discharge strategy will eliminate the direct discharge of approximately 4,070 acre-feet per year[4] of discharge into the river. This new linear route will exit the southern project fence line into Wilbur Avenue, where it will turn east (in the existing roadway or along the shoulder of the road). The route will proceed east along Wilbur Avenue for approximately 2,000 feet, passing under State Route 160, to Bridgehead Road. At Bridgehead Road, the pipeline will turn south for approximately 750 feet before turning southwest into the DDSD lift station.

2.1.3 Relocation of Project Facilities

Some of the project description modifications described in Section 2.1 will require relocation of various project features from what was previously approved by the CEC in the Final Decision. These relocations are described below.

Replacement of the Water Treatment Building and Relocation of the Water Treatment System. Due to the new water supply source, the water treatment building located on the north side of the plant (which was closer to the river water supply) will be replaced by trailer-mounted water treatment equipment on the south side of the plant near the location where the new water supply line connects with the City of Antioch's water main or another water purveyor.

Oil/Water Separator. Mirant's January 2006 request for approval to construct a stand-alone oil/water separator (OWS) for the CC8 project was approved by the CEC on July 19, 2006. The discharge point for the OWS was to a Mirant owned and operated outfall (001), the same location used by Mirant's other Contra Costa power plants. Based on amendments to the ATA that no longer require PG&E and Mirant to share facilities, PG&E has determined that it will direct any discharge from the OWS to the new wastewater pipeline described above in Section 2.1.2.

Fire Water Storage & Suppression System. Based on amendments to the ATA that no longer require PG&E and Mirant to share facilities, PG&E has determined that the fire water storage and suppression design licensed for the project is not feasible. Instead, PG&E proposes to construct a new 500,000 gallon fire water storage tank (shown on Figure 1-1) and two new 2,500 gallon per minute electric firewater pumps. The new firewater pumps will be located in the fire pump enclosure on the south side of the plant.

2.1.4 Revised Combustion Turbine Inlet Conditioning System

The CEC-approved CC8 project incorporated evaporative cooling on the combustion turbine air inlets. However, due to the change in the project's water supply, PG&E proposes to replace the evaporative cooling system with an electric chiller system. These systems are designed to reduce the inlet air temperature to the combustion turbine to 50ºF by drawing

[4] Based on an annual average discharge from the licensed project of 2,523 gpm.

the inlet air across cooling coils containing chilled water utilizing R134A refrigerant. These systems are shown on Figure 1-1, and a revised preliminary heat and mass balance is presented as Figure 2-3.

2.1.5 Elimination of Combustion Turbine Steam Power Augmentation

In addition to the changes in the cooling water system, PG&E has also reviewed the water demand of the combustion turbine's steam power augmentation (PAG) systems. As a result of this review, PG&E has determined that the water demand and economic implications do not warrant implementing PAG on the combustion turbines. By eliminating the PAG, the project's water demand will be reduced by 170 million gallons per year, and the storage capacity of the deminerlized water storage tank will be reduced from 500,000 gallons to 250,000 gallons.

2.1.6 Closed Cycle Cooling Water System

Elimination of the wet cooling tower requires a redesign of the closed cycle cooling water system. The closed cycle cooling Water system is independent from the ACC and is a much smaller closed loop system that provides cooling water to various equipment. PG&E has determined that a fin-fan heat exchanger, in combination with a small wet surface air cooled (WSAC) heat exchanger system or usage of an evaporative precooler will be used to provide the necessary heat rejection capacity. The proposed fin-fan system is similar to the ACC system. The WSAC system is a hybrid between a wet cooling tower and fin-fan heat exchanger, that uses water sprayed over the heat transfer bundles to increase cooling capacity of the system. The WSAC is expected to operate when ambient temperatures are high, or when additional cooling capacity is required beyond the capacity of the fin-fan heat exchanger or evaporative precooling systems. These new Gateway project features are shown on Figure 1-1.

2.1.7 Construction Workforce and Schedule

Based on a review of the construction workforce and construction schedule used during the licensing proceeding, PG&E's engineers have determined that a slightly larger workforce will be required to construct the Gateway project with the proposed design changes. The construction workforce is estimated at between 250 and 339 workers per day, as compared to a workforce of 285 for the CC8 project. Table 2-1 presents the construction workforce by labor type. The increase in the project workforce triggered a review of the construction equipment use assumed for construction, which in turn necessitated a new construction equipment schedule. Table 2-2 presents the construction equipment usage for the new Gateway project design.

The construction duration assumed during the licensing proceeding was 22 months.[5] After PG&E's engineers reviewed the construction schedule in light of the proposed changes, PG&E determined that a 26 month construction schedule will be required.

[5] Contra Costa Unit 8 Application for Certification, Commission Decision (P-800-01-18), pg 8.

2.2 Necessity of Proposed Change

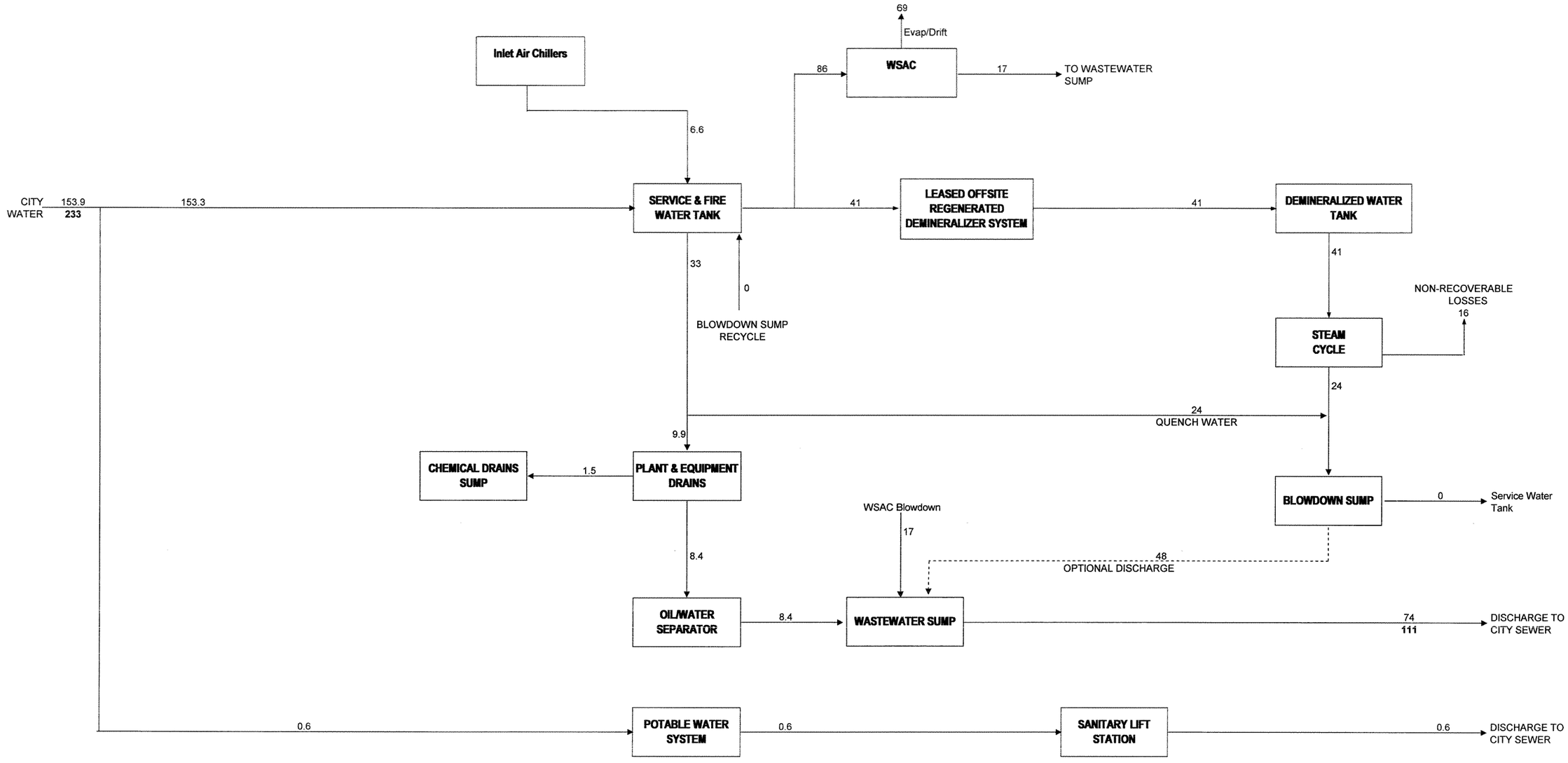
Section 1769 (a)(1)(B) and 1769(a)(1)(C) of the CEC Siting Regulations require a discussion of the necessity for the proposed changes to the project and whether this modification is based on information that was known by the petitioner during the certification proceeding. During the licensing period, the changes to the project design proposed in this amendment were not known. Specifically, the CC8 license contemplated installation of an aquatic filter barrier (AFB) to mitigate potential impacts to aquatic resources. After the CC8 license was issued to Mirant, the AFB was not approved for installation by the resource agencies. In addition, since licensing, the CEC adopted a policy guidance on the use of fresh water for cooling. The proposed changes described in this amendment will allow PG&E to minimize future permitting and economic uncertainty, increase the operational reliability of the Gateway facility, and implement CEC guidance on the use of fresh water for cooling.

TABLE 2-1
Gateway Construct Workforce Estimate by Labor Type

	Month																									
Labor Type	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**
Laborers	2	4	8	13	16	17	19	20	23	26	30	26	25	23	23	21	18	18	15	13	9	7	4	4	4	0
Carpenters/Millwrights	4	11	13	42	47	52	51	44	46	51	51	46	35	35	34	26	20	17	15	15	8	5	3	2	1	0
Ironworkers	2	4	6	8	8	8	12	13	22	26	35	44	44	40	34	31	26	24	22	18	11	6	3	2	1	0
Heavy Equip. Operator	2	4	8	8	8	8	12	13	14	13	15	12	10	9	9	9	9	9	9	7	6	7	6	4	2	0
Teamsters	2	3	4	6	6	6	9	9	11	11	13	10	9	8	7	7	8	8	8	7	5	4	2	2	2	0
Electricians	2	2	2	3	3	3	10	20	29	44	62	64	66	66	68	64	61	60	52	31	22	6	4	4	4	0
Pipefitters	1	2	2	4	8	8	10	19	35	43	60	62	54	57	62	69	75	64	56	53	47	45	30	30	8	0
Boilermakers	2	14	25	25	40	40	40	28	15	15	15	20	16	16	16	16	18	18	18	21	7	2	0	0	0	0
Insulators	0	0	0	0	0	0	0	0	0	0	0	0	0	1	9	12	12	19	19	19	19	6	0	0	0	0
Painters	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	2	2	4	4	4	4	2	0	0	0	0
Cement Finishers/Mason	1	8	8	22	30	34	30	20	17	17	11	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mechanics	1	1	2	2	2	2	4	5	6	6	6	7	7	6	6	6	6	5	4	4	4	5	3	3	2	0
Surveyors	1	2	2	2	2	2	3	4	7	7	7	7	6	6	6	5	5	4	3	3	3	2	2	2	0	0
Craft Labor Subtotal	20	55	80	135	170	180	200	195	225	259	305	305	272	268	276	268	260	250	225	195	145	97	57	53	24	0
Contractor Staff	6	9	10	14	15	16	22	23	26	28	34	34	31	28	30	30	28	26	24	20	17	16	9	8	8	0
TOTAL	26	64	90	149	185	196	222	218	251	287	339	339	303	296	306	298	288	276	249	215	162	113	66	61	32	0

TABLE 2-2
Gateway Construct Equipment Estimate

	Month																									
Equipment	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**
Pickup Trucks	4	4	4	4	4	4	9	9	10	10	13	13	11	9	10	8	7	7	7	7	7	8	5	5	5	0
Haul Trucks	2	3	4	6	6	6	8	9	11	11	12	9	7	7	6	6	7	7	7	6	5	4	3	3	2	0
Fuel Truck	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0
Dump Truck	1	3	4	4	4	4	5	5	5	4	2	2	0	0	0	0	0	0	0	0	0	1	1	1	1	0
Backhoe	1	2	2	2	2	2	2	2	2	2	2	2	0	0	0	0	0	0	0	0	0	1	1	1	1	0
Front End Loader	0	1	2	2	2	2	2	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bulldozer	0	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	0
Bobcat	0	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	1	1	1	1	0
Hydraulic Crane	1	3	4	5	5	5	8	10	12	13	13	13	13	11	10	8	7	7	7	6	6	5	3	2	2	0
Large Mast Crane	0	1	1	1	1	1	1	0	0	0	0	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0
Roller Compactor	0	0	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	1	1	1	1	0
IC Welder	4	5	4	4	4	4	8	9	9	9	10	10	8	6	5	5	5	5	5	5	5	5	3	3	3	0
IC Air Compressor	1	1	2	2	2	2	4	4	4	4	4	4	3	2	2	2	2	2	2	2	2	2	1	1	1	0
Forklift	0	2	2	2	2	2	5	5	6	6	7	7	6	5	4	4	3	3	3	3	3	3	2	2	2	0
JLG	0	2	4	4	4	4	8	11	14	14	16	17	17	15	16	16	15	15	14	14	13	11	5	4	1	0
TOTAL	14	30	37	40	40	40	64	69	78	78	83	82	67	57	55	51	48	48	47	45	42	44	28	26	22	0



NOTE:
1. FLOWS ARE IN GALLONS PER MINUTE (gpm).
2. FLOWS INDICATED REPRESENT AVERAGE DAILY USAGE BASED ON OPERATING 16 HRS PER DAY
3. FLOWS IN BOLD REPRESENT AVERAGE INSTANTENOUS FLOWS

BOILER BLOWDOWN RECYCLE	NO	COMBUSTION TURBINE FUEL	Natural Gas	R.O. RECOVERY	N/A
CT INLET AIR CHILLER	ON	NET PLANT OUTPUT (MW)	?	DEMINERALIZER EFFICIENCY	100%
WET SURFACE AIR COOLER	ON	TURBINE CONFIGURATION	2 x 1 'F'	CYCLE MAKEUP RATE	2.00%
MEAN DRY BULB (°F)	100	AMBIENT TEMP (F)	100	LOAD FACTOR	66%
RELATIVE HUMIDITY	20%	DUCT FIRING	Fired	AIR COOLED CONDENSER	

FIGURE 2-1
WATER MASS BALANCE
PG&E GATEWAY GENERATING STATION
CONTRA COSTA, CALIFORNIA

SOURCE: Black & Veatch Corporation, November 15, 2006

FIGURE 2-2
WATER SUPPLY AND DISCHARGE LINE
PG&E
CONTRA COSTA, CALIFORNIA

SOURCE: Black & Veatch Corporation, November 15, 2006

ES122006002SAC FIG_2_2.ai 12-04-2006 sbm

CH2MHILL

Contra Costa -- 2x1 7FA Combined Cycle

Estimated Thermal Performance with
Air-Cooled Condenser Heat Rejection System

B&V Project 144937

Scenario Name		Case 1	Case 2	Case 3	Case 4A	Case 4B	Case 5
Ambient Dry Bulb Temperature		106 F	101 F	86 F	60 F	60 F	20 F
Ambient Relative Humidity		13%	20%	33%	68%	68%	92%
Compressor Inlet Temperature		50 F	50 F	50 F	50 F	60 F	20 F
Compressor Inlet Relative Humidity		100%	100%	100%	100%	68%	92%
Duct Firing		On	On	On	On	Off	Off
Power Augmentation		Off	Off	Off	Off	Off	Off
Chiller		On	On	On	On	Off	Off
Load		Base	Base	Base	Base	Base	Base
STG Back Pressure		5.68 in HgA	5 in HgA	3.28 in HgA	2 in HgA	2 in HgA	2 in HgA
Estimated (Not Guaranteed) New & Clean Performance							
Number of CTG/HRSG Units Operating		2	2	2	2	2	2
Gross CTG Output (each)	kW	181380	181380	181380	181380	176150	192700
Gross CTG Output (total)	kW	362760	362760	362760	362760	352300	385400
Gross CTG Heat Rate (LHV)	Btu/kWh	9180	9180	9180	9180	9240	9100
Gross CTG Heat Rate (HHV)	Btu/kWh	10190	10190	10190	10190	10260	10100
CTG Heat Input (LHV) (total)	MBtu/h	3330.1	3330.1	3330.1	3330.1	3255.3	3507.1
CTG Heat Input (HHV) (total)	MBtu/h	3696.1	3696.1	3696.1	3696.1	3613.1	3892.5
Duct Burner Heat Input (LHV) (each)	MBtu/h	221.9	221.9	221.9	221.9	0	0
Duct Burner Heat Input (HHV) (each)	MBtu/h	246.3	246.3	246.3	246.3	0	0
Duct Burner Heat Input (LHV) (total)	MBtu/h	443.8	443.8	443.8	443.8	0	0
Duct Burner Heat Input (HHV) (total)	MBtu/h	887.6	887.6	887.6	887.6	0	0
Gross STG Output	kW	233280	237490	248210	253870	193000	192790
Gross Plant Output	kW	596040	600250	610970	616630	545300	578190
Gross Cycle Heat Rate (LHV)	Btu/kWh	6330	6280	6170	6110	5980	6070
Gross Cycle Heat Rate (HHV)	Btu/kWh	7030	6970	6850	6780	6640	6740
Auxiliary Power/Losses	kW	24830	24660	24790	23760	20570	21060
Plant Heat Input (LHV)	MBtu/h	3770	3770	3770	3770	3260	3510
Plant Heat Input (HHV)	MBtu/h	4580	4580	4580	4580	3620	3900
Net Plant Output	kW	571210	575590	586180	592870	524730	557130
Net Plant Heat Rate (LHV)	Btu/kWh	6600	6550	6430	6360	6210	6300
Net Plant Heat Rate (HHV)	Btu/kWh	7330	7270	7140	7060	6890	6990
Net Plant Efficiency (LHV)	%	51.7	52.1	53.1	53.7	54.9	54.2
Net Plant Efficiency (HHV)	%	46.6	46.9	47.8	48.3	49.5	48.8
Estimated Auxiliary Power/Losses							
Air-Cooled Condenser Fans	kW	5010	5030	5170	5440	5440	5940
Chiller	kW	3110	2760	2330	800	0	0
Total Plant Auxiliary Power/Losses	kW	24830	24660	24790	23760	20570	21060

Heat Balance Notes & Design Basis

1. Performance shown is for information only.
2. CTG performance data was provided by PG&E.
3. Performance is based on 0% HRSG blowdown, 70 F demineralized makeup water temperature, and 60 F fuel gas with adequate pressure at the site boundary.
4. The air cooled condenser design is based on fully fired steam production with inlet air conditioning on a 101F/20% day and 5 in HgA steam turbine back pressure.
5. Chiller and air cooled condenser auxiliary power are B&V in house estimations.

SOURCE: Black & Veatch Corporation, November 15, 2006

FIGURE 2-3
PRELIMINARY HEAT AND MASS BALANCE
PG&E GATEWAY GENERATING STATION
CONTRA COSTA, CALIFORNIA

CH2MHILL

ES122006002SAC FIG_2_3.ai 12-04-2006 sbm

SECTION 3

Environmental Analysis of the Project Changes

The proposed project changes set forth in this Amendment will allow PG&E to eliminate the use of San Joaquin River water to cool the plant and increase long-term operational reliability of the facility, while significantly reducing environmental impacts associated with the licensed project design. An analysis of each of the environmental areas is presented below for the proposed Amendment. For those topic areas where project design changes have no effect on the analysis performed during the licensing proceeding, a brief analysis of the impacts is prepared. For instance, the proposed design changes will not have a measurable effect on geology, as the changes are mainly onsite and the geologic resource impacts were already analyzed during the licensing proceeding. However, for those topic areas where the project design changes have the potential for significant effects, a more robust analysis is provided (e.g., potential visual impacts from switching from a wet cooling tower to an ACC system).

3.1 Air Quality

This section reviews the potential air quality impacts associated with the proposed changes to the project description relative to the air quality impacts identified in the Commission Decision. The following areas were reviewed:

- Construction
- Operations
- Mitigation Measures
- Cumulative Impacts
- Compliance with LORS
- Conclusions

3.1.1 Proposed Emissions

3.1.1.1 Construction Emissions

Proposed modifications with the potential to affect air quality impacts due to construction activities include:

- An increase in expected truck and traffic activities,
- A longer construction period and higher construction equipment loadings to reflect the replacement of the cooling tower with the air-cooled condenser system,
- Construction of off-site linear facilities that were not needed when the project was to be supported by the existing CCPP infrastructure, and
- Revised emission factors to reflect the change in off-road engine emission standards since the project was originally licensed.

Tables 3.1-1 and 3.1-2 summarize the revised levels of criteria pollutant emissions generated from onsite construction activities as a result of the proposed design changes. Table 3.1-3 shows that the revised construction schedule is expected to generate lower emissions than the original construction schedule. The revised construction schedule and equipment loadings are shown along with detailed calculations in Appendix 3.1-1.

TABLE 3.1-1
Estimated Maximum Daily Onsite Construction Emissions

	Emissions, lb/day					
Source	**NOx**	**SOx**	**CO**	**POC**	**PM_{10}**	**$PM_{2.5}$**
Construction Equipment	131.7	0.21	91.5	13.3	5.0	5.0
Fugitive Dust	—-	—-	—-	—-	23.0	4.2
Total*	131.7	0.21	91.5	13.3	27.9	9.2

* Total represents highest daily emissions occurring during any one month.

TABLE 3.1-2
Estimated Maximum Annual Onsite Construction Emissions

	Emissions, tons per year					
Source	**NOx**	**SOx**	**CO**	**POC**	**PM_{10}**	**$PM_{2.5}$**
Construction Equipment	24.6	0.04	17.1	2.5	0.9	0.9
Fugitive Dust	—-	—-	—-	—-	2.2	0.4
Total*	24.6	0.04	17.1	2.5	3.1	1.3

* Total represents highest emissions occurring during any 12-month period.

TABLE 3.1-3
Change in Onsite Construction Emissions from Project as Licensed

Units	**NOx**	**SOx**	**CO**	**POC**	**PM_{10}**	**$PM_{2.5}$**
Project as Licensed, lb/hr[a]	43	4	15	4	10.0	5.0
Revised Project Design, lb/hr[b]	13.2	0.02	9.1	1.3	1.5	0.7
Net Change in Emissions, lb/day	(29.8)	(3.9)	(5.9)	(2.7)	(8.5)	(4.3)
Project as Licensed, tpy[a]	36.5	3.4	12.8	3.7	24.5	7.5
Revised Project Design, tpy	24.6	0.04	17.1	2.5	3.1	1.3
Net Change in Emissions, tpy	(11.9)	(3.4)	4.3	(1.2)	(21.4)	(6.2)

[a] From Appendix C4 to the AFC ('Construction Equipment Exhaust Emissions' and 'Construction Fugitive Dust'), summarized in FSA Air Quality Table 4. $PM_{2.5}$ fraction of fugitive dust not provided; assume same as revised project design calculation.

[b] Calculated from lb/day in Table 1, assuming 10 hours/day of construction activity and 24 hours/day of fugitive dust.

With the exception of annual CO emissions, which are projected to increase, total onsite construction emissions will be reduced on both a peak day and annual average basis, in spite of the increase in construction equipment loading. This is chiefly due to the imposition of Tier 2 emission standards for construction equipment engines.

The new linear facilities will be constructed during the initial phase of the project construction. The water supply line will be constructed first, followed by the wastewater line. Peak onsite construction loading and emissions will occur during Month 11 of the construction period, and the highest 12-month period begins during Month 7. Because construction of the linear facilities will take place during the early months of onsite construction, these activities will be completed before the period of highest construction activity and will not contribute to the impacts quantified above.

3.1.1.2 Operating Emissions

Proposed modifications with potential to affect air quality impacts due to the revised operational activities include:

- Eliminating the cooling tower,
- Adding a small wet surface air cooled heat exchanger unit (WSAC) as part of the auxiliary cooling system, and
- Adding inlet air chillers to improve the performance of the CTGs under high-temperature conditions.[6]

Tables 3.1-4 and 3.1-5 summarize the revised daily and annual emissions of criteria pollutants generated from operational activities as a result of the elimination of the cooling tower and addition of the WSAC. A calculation of PM_{10} emissions from the WSAC is included in Appendix 3.1-2.

TABLE 3.1-4
Change in Maximum Daily Emissions, lb/day

	Emissions, lb/day				
Operational Source	**NOx**	**SOx**	**CO**	**POC**	**$PM_{10}/PM_{2.5}$**
CTGs[a]	1,994	297	3,602	468	624
Fuel Heater[b]	7.2	0.5	2.4	3.0	1.4
WSAC[c]	--	--	--	--	4.7
Revised Max. Daily Emissions	2.001.2	297.5	3,604.4	471.0	630.1
Previous Max. Daily Emissions[a]	2.001.2	297.5	3,604.4	471.0	668.1
Change in Max. Daily Emissions	0	0	0	0	(38.0)

[a] Table 1 of the FDOC; Condition 23 of District ATC.
[b] Table 1 of the FDOC.
[c] Based on 24 hours per day of operations

[6] The project will also include an evaporative cooling system, but that system will not affect maximum air emissions.

TABLE 3.1-5
Change in Maximum Annual Emissions, tons per year

Operational Source	Emissions, tons per year				
	NOx	SOx	CO	POC	$PM_{10}/PM_{2.5}$
CTGs[a]	174.3	48.5	259.1	46.6	105.0
Fuel Heater[a]	<0.1	<0.1	<0.1	<0.1	<0.1
WSAC[b]	--	--	--	--	0.4
Revised Max. Annual Emissions	174.3	48.5	259.1	46.6	105.4
Previous Max. Annual Emissions[a]	174.3	48.5	259.1	46.6	112.2
Change in Max. Annual Emissions	0	0	0	0	(6.8)

[a] Condition 24 of the District ATC; Table B-5 of the FDOC.
[b] Based on 4,000 hours per year of operations.

These calculations show that PM_{10} and $PM_{2.5}$ emissions from the project will be reduced by over 6 tons per year as a result of eliminating the cooling tower.

The potential for increased emissions due to the addition of inlet air chilling on the CTGs was also evaluated. The original analysis of turbine performance was based on evaporative cooling and power augmentation steam injection under high load, high temperature conditions. PG&E proposes to eliminate power augmentation steam injection and to use a chiller to cool the turbine inlet air under high temperature conditions. If this change affected turbine performance for the operating conditions that produced the worst-case air quality impacts for the original AFC or allowed a higher maximum hourly heat input than was used to calculate maximum hourly emissions, there would be the potential for new worst-case operating conditions.

The operating conditions producing the worst-case air quality impacts were shown in Table 8.1-14 of the AFC, and are as follows:

- 100 percent load, duct burners at 359 MMBtu/hr, 100 °F
- 50 percent load, 100 °F
- 50 percent load, 30 °F

In addition, the highest hourly emissions for each pollutant occur under the following operating condition (page 1 of Appendix C5 to the AFC):

- 100 percent load, duct burners at 394.5 MMBtu/hr, 95 °F

Table 3.1-6 below compares the operating conditions for the worst-case operating cases evaluated in the AFC with the revised conditions incorporating the proposed changes. Cases 1 and 2 below reflect the low-load operating conditions that produced the maximum-modeled impacts for some pollutants in the original AFC. Because power augmentation steam injection, inlet air chilling, and duct-firing are not used under low-temperature conditions, the 30 °F case will not be affected by the proposed change. Similarly, the chiller will not be in operation and duct-firing would not be used under low-load conditions, so there will be no change in CTG operations for the 50 percent load, 100ºF case.

For the 100 °F, 100 percent load with duct firing operating condition in the original analysis (shown as Case 3 in Table 3.1-6 below), the maximum hourly heat input to each CTG was 1,832 MMBtu/hr (HHV) and the maximum hourly heat input to the duct burners was 359 MMBtu/hr (HHV) for a total maximum hourly heat input of 2,191 MMBtu/hr. With inlet air chilling, the maximum hourly heat input to each CTG would be slightly higher: 1,848 MMBtu/hr (HHV). However, because of physical limits on the steam turbine, under these turbine-firing conditions the heat input to the duct burners would be limited to 24 MMBtu/hr (HHV), so the new maximum hourly heat input would be only 2,094 MMBtu/hr (HHV), about 4 percent lower than for the case as evaluated in the original licensing proceeding. This small change in heat input will not affect the conclusion that this operating case would produce the highest 1-hour average concentrations (see Table 8.1-13 of the original AFC).

Case 4 in Table 3.1-6 reflects the maximum duct burner-firing rate for both the original and revised design. Because it reflects the highest hourly total heat input for the combined-cycle units, this operating case produces the highest mass emissions and was used as the basis for the permitted emission limits. For the original proceeding, the maximum total heat input to each CTG plus duct burners was 2,226.5 MMBtu/hr (HHV), including 394.5 MMBtu/hr (HHV) of heat input to the duct burners. As discussed above for Case 3, the heat input to the duct burners will be limited by the steam turbine capacity when the turbine is operated at maximum heat input with chilling. The maximum duct burner heat input could only be achieved if the chillers were turned off. Without inlet air chilling or power augmentation, the maximum heat input that can be achieved at 100 °F is 1,598.4 MMBtu/hr (HHV). Therefore, as shown in Table 3.1-6 for Case 4, the proposed addition of the inlet air chiller will not increase the maximum total hourly heat input capacity of the CTG plus duct burners, so the maximum hourly emissions from the units will not increase as a result of the proposed amendment.

TABLE 3.1-6
Comparison of Gas Turbine/Duct Burner Heat Inputs Under Worst-Case Conditions (HHV)

Case	**1**		**2**		**3**		**4**	
Ambient Temperature	**100 °F**		**30 °F**		**100 °F**		**95 °F**	
Turbine Load (Percent)	**50**		**50**		**100**		**100**	
	Original	**Proposed**	**Original**	**Proposed**	**Original**	**Proposed**	**Original**	**Proposed**
Chiller On/Off	n/a	OFF	n/a	OFF	n/a	ON	n/a	OFF
CTG Heat Input, MMBtu/hr	1,114	1,114	1,209	1,209	1,832	1,848	1,832	1,598.4
Duct Burner Heat Input, MMBtu/hr	0	0	0	0	359	246	394.5	390.1
Total Heat Input, MMBtu/hr	1,114	1,114	1,209	1,209	2,191	2,094	2,226.5	1,988.5

Based on the conservatively high operating assumptions shown in Appendix 3.1-2,[7] emissions from the WSAC will be less than 1 lb/hr and 1 tpy. In the WSAC process, the warm process water is cooled in a closed-loop tube bundle so the process water being cooled never comes in contact with the outside air. Therefore, the WSAC is exempt under BAAQMD Rule 2, Section 2-1-128.4 ('Water cooling towers and water cooling ponds not used for evaporative cooling of process water, or not used for evaporative cooling of water from barometric jets or from barometric condensers').[8]

3.1.2 Air Quality Impacts

Potential changes in air quality impacts have been evaluated for both the construction and operational phases of the project.

3.1.2.1 Construction

The revised calculations provided in Tables 3.1-1, 3.1-2 and 3.1-3 indicate that, with the exception of annual CO, emissions during the construction period are expected to be lower on an hourly, daily, and annual basis than the levels originally evaluated for the project. The CO standards are short-term standards, and the maximum hourly CO emissions for the new construction schedule are expected to be lower than the maximum hourly emissions calculated for the original schedule. Therefore, the potential increase in maximum annual CO does not affect the ambient impacts for the short-term standards.

Overall, the ambient impacts of construction are expected to be lower than the impacts originally projected for the project. The Staff Assessment concluded that with the mitigation imposed by Conditions of Certification AQC-1 and AQC-2, the impacts during construction would be less than significant. The Applicant believes that this conclusion remains valid with the new, lower expected emissions. The potential increase in maximum annual CO does not affect the conclusion that the CO impacts during construction will not be significant.

3.1.2.2 Operations

The immediate effect of the proposed amendment on project emissions is the reduction in PM_{10} and $PM_{2.5}$ resulting from the elimination of the wet cooling tower from the project design. However, the change in the physical configuration of the project—replacing the 60-foot high wet cooling tower with a 128-foot high ACC—could affect the modeled impacts of the project by altering the dispersion of the CTG exhaust.

To evaluate the potential impacts of the ACC, the BPIP analysis submitted as part of the ambient air quality impact analysis for the Enhanced Site Plan (April 2001) was rerun with the ACC in place of the cooling tower. The revised BPIP analysis, which is provided on CD as part of this filing, indicates that the ACC could potentially affect the modeling results for the CTG. Therefore, the turbine screening modeling analysis was run using the 11 operating conditions evaluated in the original filing. The screening analysis, which is also being provided on CD, evaluated CTG impacts for each pollutant and averaging period for the

[7] Worst-case assumptions are used for each element of the calculation to ensure that the calculated emissions are conservatively high. See Appendix 3.1-2.

[8] Rule 2, Section 2-1-128 exempts sources listed in the subsection, 'provided that the source does not require permitting pursuant to Section 2-1-319.' Section 2-1-319 requires permitting of sources with emissions in excess of 5 tpy.

11 operating conditions considered in the AFC, using both the Enhanced Site Plan and the proposed new site plan that includes the ACC. A summary of the screening results is shown in Appendix 3.1-3. The screening analysis concluded that there is no difference in CTG impacts for the two layouts, indicating that the replacement of the cooling tower with the ACC will not affect maximum-modeled impacts from the CTGs. Therefore the proposed replacement of the cooling tower with the ACC will not change the FSA's conclusions and recommendations regarding operational impacts:

> The … Project's emissions of NOx, SO_2 and CO will not cause a violation of any NO_2, SO_2 or CO ambient air quality standards, and therefore, *their impacts are not significant.*
>
> The project's air quality impacts from directly emitted PM_{10} and of the ozone precursor emissions of NOx and VOC and PM_{10} precursors of NOx and SO_2 could be significant if left unmitigated. …*mitigation measures reduce the potential for directly emitted PM_{10}, as well as ozone and secondary PM_{10} formation to a level of insignificance.* [FSA p. 69; emphasis added]

Table 3.1-7 below is an updated version of Air Quality Table 9 from the FSA. The background values in the original table have been updated to reflect the highest monitored concentration in the area from the past three years (2003 through 2005).[9]

The approved offsets have already been provided in the form of ERCs that have been surrendered to the District. In addition, PM_{10} and $PM_{2.5}$ emissions and ambient impacts from the project will be reduced as a result of the substitution of dry cooling for the original wet cooling system.

The proposed changes provide a net reduction in air quality impacts. First, the delay in construction has allowed new construction equipment emission standards to be implemented, reducing overall construction emissions on a daily and annual basis. Secondly, the elimination of the wet cooling tower eliminates the associated particulate matter emissions. Finally, the implementation of the construction air quality COCs further reduces construction impacts. Therefore, the CEC's conclusion that the air quality impacts are not significant is still applicable and in fact the project modifications will result in a net air quality benefit.

3.1.3 Mitigation Measures

As discussed previously, emissions of all pollutants during onsite project construction are expected to be lower (with the exception of annual CO emissions) than the construction emissions evaluated in the AFC. The revised construction emissions calculations are based on the most current available information regarding construction emission rates and activities. To ensure that the best and most current construction practices are utilized in the construction of the project, PG&E proposes amending the construction mitigation measures imposed by Conditions AQC-1 and AQC-2 to make them consistent with air quality construction mitigation conditions from projects recently licensed by the CEC (including the San Francisco Electric Reliability Project [04-AFC-1]. The proposed amendments to the air quality construction mitigation conditions are presented in Section 4 and Appendix 4.

[9] The table has also been updated to reflect the new federal PM_{10} and $PM_{2.5}$ standards that take effect on December 18, 2006.

TABLE 3.1-7
Worst-Case Facility Impacts on Ambient Air Quality

Pollutant	Avg. Prd.	Max Modeled Impact, $\mu g/m^3$ [a]	Background, $\mu g/m^3$ [b]	Total Impacts, $\mu g/m^3$	Federal Standard, $\mu g/m^3$	State Standard, $\mu g/m^3$
NOx	1-hour	93	115	208	--	470
	Annual	0.2	23	23	100	--
SO_2	1-hour	16	351	367	--	655
	24-hour	2	26	28	105	--
CO	1-hour	190	4,700	4,890	40,000	23,000
	8-hour	25	2,122	2,147	10,000	10,000
PM_{10}	24-hour	5	64.0	69	150	50
	Annual	0.2	21.7	21.9	--[c]	20
$PM_{2.5}$	24-hour	5	53[d]	58	35	--
	Annual	0.2	11.5	11.7	15	12

Notes:
[a] Max. modeled PM_{10} and $PM_{2.5}$ impacts are expected to be lower than those shown because these results include operation of the cooling tower, which is being eliminated as part of this amendment. See text.
[b] Background concentrations from ARB ADAM and EPA AirDATA websites, accessible at *http://www.arb.ca.gov/aqd/aqdpage.htm* and *http://www.epa.gov/air/data/reports.html*. NOx, SO_2, CO and PM_{10} from Pittsburg. $PM_{2.5}$ from Concord.
[c] Federal annual PM_{10} standard withdrawn effective December 18, 2006.
[d] 3-year average 98th percentile value.

With the proposed minor updates to the construction mitigation conditions, PG&E believes that the air quality impacts during project construction significantly below the levels analyzed during the licensing proceeding which were determined to be less than significant.

Offsets in the form of emission reduction credits were approved by the CEC and the District during the licensing of the original project. These ERCs were surrendered to the District prior to the commencement of construction. The proposed changes to the project would result in lower emissions, nor will additional mitigation be required beyond the Commission's previous determination. Therefore, the air quality impacts of the proposed project changes will be less than the impacts analyzed during the licensing proceeding.

3.1.4 Cumulative Impacts

Because no new ambient impacts are anticipated as a result of the proposed changes to the project, no significant change to the original assessment of the cumulative impact is expected.

3.1.5 Compliance with LORS

The Project will be in compliance with all applicable LORS regarding long-term and short-term project impacts.

3.1.6 Conclusions

With the proposed amendments to the construction mitigation conditions, the Staff's conclusions that air quality impacts from construction and operation of the CC8 project are less than significant will still be applicable.

3.2 Biological Resources

A biological reconnaissance-level survey of the project site and new water supply and waste discharge linear routes was conducted by Victor Leighton and Rick Crowe of CH2M HILL on September 13, 2006. The investigation included a visual survey of the project site and associated construction laydown areas to assess the potential presence of sensitive habitats or special-status species within the existing and newly proposed project areas (new pipeline routes). Vegetation communities and observed wildlife species were also characterized in order to calculate the potential impacts to particular habitat types. Species-specific or protocol surveys were not conducted for this effort.

During the survey, it was apparent that much of the underground construction was previously completed while the project was under active construction by Mirant; i.e., disturbance of much of the proposed power plant site and laydown areas. Previous construction activities included the stockpiling of soil in the southern portion of the facility and the terracing of soil for the natural gas-fired power units in the central portion of the site. The project site is bordered on the north and east sides by a man-made ditch line that conveys water from the site to the north into the discharge canal, which empties in to the San Joaquin River. The ditch has been protected with straw bales, rock and sediment fencing to prevent the deposition of loose soil into the river. The northern portion of the laydown area adjacent to the San Joaquin River is the site of an old sportsman/employee recreational facility. Several trailers and out buildings still exist on site, and there are several large eucalyptus trees and mulberry trees located along the perimeter of the area. Within these existing trees several large and medium size stick nests were observed. These stick nests were not occupied at the time of this survey in September, but are most likely yellow-billed magpie (*Pica nuttalli*) and American crow (*Corvus brachyrhynchos*). The interior of the old recreational facility, along with the associated construction laydown areas, were covered in gravel.

Due to the level of disturbance associated with the previous construction, the habitat is currently dominated by non-native ruderal vegetation. Vegetation species that occur at this site include common invasive species such as yellow starthistle (*Centaurea solstitialis*), wild oats (*Avena sp.*), tumble weed (*Salsola sp.*), clover (*Medicago sp.*), rat-tail fescue (*Vulpia myuros*), and numerous other non-native grass and forbe species.

Wildlife identified within the project site, either through direct observation or through visual clues (i.e. tracks, scat indicating their presence and use within the proposed project area), include mammal species such as striped skunk (*Mephitis mephitis*), raccoon (*Procyon*

lotor), coyote (*Canis latrans*), opossum (*Didelphis virginiana*), black-tailed hare (*Lepus californicus*), and California ground squirrel (*Spermophilus beecheyi*). Numerous ground squirrel burrows were observed throughout the site, mostly occurring along the eastern and northern portion of the site. All burrows were inspected for the presence of burrowing owls (*Speotyto cunicularia*), a California Species of Concern; and visual clues were also used as indicators to determine possible prior usage of the burrows by this species (i.e. white wash, feathers, and/or cast pellets). No burrowing owls or visual indicators of prior usage by this species were observed during the survey. Avian species observed on the site or within the immediate area included Black phoebe (*Sayornis nigricans*), red-tailed hawk (*Buteo jamaicensis*), European starling (*Sturnus vulgaris*), western scrub jay (*Aphelocoma californica*), American kestrel (*Falco sparverius*), Morning dove (*Zenaida macroura*), rock dove (*Columba livia*), barn swallow (*Hirundo rustica*) and American crow (*Corvus brachyrhynchos*).

No special-status species or wetlands were observed on the proposed plant site or associated construction laydown areas. Although raptors were observed foraging in the area, no suitable nest sites were observed on the project site. Nesting birds occur on the site in the landscape trees and would require protection during construction.

The proposed water supply and discharge pipeline routes are located in existing roadways or disturbed areas. No biologically sensitive species were noted during the survey of either of these linear routes.

3.2.1 Environmental Impacts

The proposed project changes will result in a significant environmental benefit to biological resources over the approved project design and will not result in any new significant impacts. The CC8 project licensed by the CEC estimated using between 5,000 and 37,500 gallons per minute of river water for cooling.[10] The elimination of San Joaquin River water eliminates the biological resource impacts due to entrainment and impingement of aquatic organisms over the project as originally approved. This is a significant benefit associated with the change from CC8 wet cooling technology to the dry cooling system proposed for the Gateway project. This proposed modification will also eliminate the wastewater discharge to the San Joaquin River and the impacts associated with construction of the AFB. This will result in significant reduction in impacts to aquatic resources over those analyzed during the CC8 licensing proceeding.

Impacts associated with construction and operation of the water supply and discharge pipelines are not expected to impact biological resources due to the urban, highly disturbed nature of the linear routes. Any potential impacts would be mitigated by implementation of the biological resource Conditions of Certification presented in the Commission Decision (as amended in Section 4 of this amendment petition).

3.2.2 Cumulative Impacts

The proposed project changes result in a net reduction of potential significant cumulative biological resource impacts. The new project components described in this Amendment will not result in any new cumulative biological impacts.

[10] Contra Costa Unit 8 Application for Certification, Commission Decision (P-800-01-18), pgs 99 and 114.

3.2.3 LORS

The proposed project changes will not result in violation of any LORS, nor will it be inconsistent with any adopted plans.

Overall, the proposed project changes will eliminate the following permits and necessary agency oversight, as they are only applicable to the use of river water.

- USFWS/NMFS Biological Opinion
- Clean Water Act NPDES Permit
- Clean Water Act Section 10 Rivers and Harbor Permit
- California Clean Water Act Section 1603 Streambed Alteration Permit
- California Clean Water Act Section 2081 Incidental Take Permit

3.3 Cultural Resources

As a majority of the earth moving activities that would impact native soils have already occurred, the proposed onsite changes to the project design are not expected to increase prehistoric cultural resource impacts above those analyzed and documented in the Commission Decision.

The CC8 Final Decision concluded that the construction of the project would alter the historic setting of the Contra Costa Power plant to a small degree, resulting in impacts that would not be a substantial adverse change or a significant effect.[11] The addition of the ACC is not expected to alter this conclusion. Furthermore, the ACC will offset the visual plumes associated with the licensed cooling tower.

The new linear facilities being proposed by PG&E were not analyzed in the Commission Decision. However, the areas potentially impacted by the new water supply and discharge lines were included in the archival research. As the linear routes are located in existing roadways or in heavily industrialized areas, encountering prehistoric resources during construction of the linears is possible, but unlikely due to previous disturbance of the linear corridor. Implementation of the 14 cultural resource COCs will mitigate any potential impacts to less than significant levels.

The project as proposed is expected to comply with all applicable cultural resources LORS.

3.4 Land Use

The project site and linear routes are located in an unincorporated area of Contra Costa County, in the City of Antioch sphere of influence. The County revised its General Plan in January 2005. The project site is located in the East County Area. The land use goals presented in the General Plan encourage providing opportunities for economic growth in the County (Goal 3-B), provide for a range of land uses that serve economic segments of the county (Goal 3-D), and development of land uses that balance job availability and housing availability (Goal 3-K). The specific land use policies for the East County Area (policies 3-47 through 3-53) focus on growth in the area being concentrated in the Oakley community,

[11] Contra Costa Unit 8 Application for Certification, Commission Decision (P-800-01-18), pg 80.

associating development activities with service availability criteria, and restricting development near transportation corridors already negatively impacted.

The project design changes proposed will not alter the conclusions found in the Commission Decision that the project is consistent with applicable LORS. The proposed water supply and discharge pipelines are also expected to be consistent with the County's General Plan.

With the implementation of the land use conditions of certification, the project will continue to comply with all applicable land use LORS.

3.5 Noise

This section analyzes the potential change in noise impacts as a result of the proposed modifications to the project. The proposed changes having the greatest influence on noise include the following:

- Replacing the 10-cell wet cooling tower with an ACC
- Eliminating the use of steam power augmentation
- Eliminating the combustion turbine inlet evaporation system
- Incorporating combustion turbine inlet chilling systems for each combustion turbine

The effects of each of these modifications on noise impacts are discussed below.

3.5.1 Construction Impacts

The proposed project changes do not result in changes to the potential noise emissions during construction.

3.5.2 Operational Impacts

A detailed noise model incorporating the proposed new project design features was developed by PG&E's EPC contractor, Black & Veatch. The results of that analysis are summarized below. As is the case on all projects at this stage of development, the data presented is representative of anticipated project equipment levels and resulting overall project noise levels. The noise analysis will continue to be refined as detailed design efforts progress to ensure the overall project noise objectives are met.

Table 3.5-1 presents the equipment noise levels used to develop the model of the proposed project changes.

TABLE 3.5-1
Summary of Octave Band Sound Power Levels of Proposed Equipment (dB Flat)

Equipment	31.5	63	125	250	500	1K	2K	4K	8K	Overall dBA
Combustion Turbine Generator	116	116	116	110	108	106	110	112	109	117
Heat Recovery Steam Generator & Stack	122	127	125	120	110	109	96	74	52	116
Steam Turbine Generator	112	111	108	106	104	99	94	90	88	105

TABLE 3.5-1
Summary of Octave Band Sound Power Levels of Proposed Equipment (dB Flat)

Equipment	31.5	63	125	250	500	1K	2K	4K	8K	Overall dBA
Generator Step-Up Transformer	102	108	110	109	105	99	94	89	82	106
Auxiliary Transformer	93	99	101	100	96	90	85	80	73	97
Boiler Feed Pump/Motor Assembly	102	107	105	103	101	99	98	96	92	105
Closed Cycle Cooling Water Pump/Motor Assembly	98	103	101	99	97	95	94	92	88	102
Condensate Pump/Motor Assembly	98	103	101	99	97	95	94	92	88	102
Fuel Gas Compressor Package	127	127	126	123	118	117	110	104	99	121
Fuel Gas Compressor Air Cooler	101	100	96	92	98	89	85	81	73	97
Air Cooled Condenser	109	108	104	100	106	97	93	89	81	105
Air-Cooled Heat Exchanger	107	105	101	98	104	95	90	87	78	103
Combustion Turbine Inlet Chiller Air Cooler	105	103	99	96	102	93	88	85	76	101
Combustion Turbine Inlet Air Chiller	106	106	105	104	105	103	98	93	93	107
Sky Vent	77	81	86	91	95	97	98	93	85	103
Blow Down Vent	86	92	98	97	87	80	90	94	93	98
Drip Leg Drain Stack	90	96	100	97	85	84	94	92	90	99
Steam Jet Ejector Vent	101	107	113	112	102	95	105	109	108	113
Bypass Valve	59	64	77	84	86	91	101	99	91	105

Note:
Sound power levels are based on currently available data and do not reflect attenuation due to mitigation measures such as barriers, shielding, enclosures, buildings, etc

Table 3.5-2 presents the anticipated steady state noise level of the project under full load at the locations identified in Condition of Certification NOISE-6.

TABLE 3.5-2
Predicted Project Noise Level (dBA)

Location	Approx. Distance to Center of Unit B Stack (ft)	Project Noise Level (dBA)
OML5	900	67
OML6	1050	67
OML7	1225	65

TABLE 3.5-2
Predicted Project Noise Level (dBA)

Location	Approx. Distance to Center of Unit B Stack (ft)	Project Noise Level (dBA)
OML5	900	67
OML6	1050	67

Additional ambient noise data was collected by Black & Veatch as part of their initial preconstruction activities in July 2001. This data was previously submitted to the CEC on July 1, 2003. For completeness, the ambient noise data are included in Appendix 3.5-1. Table 3.5-3 presents a summary of the July 2001 ambient noise measurements.

TABLE 3.5-3
Results of July 2001 Noise Monitoring (dBA)

Location	Nighttime Average L90 (10 PM to 7 AM)
OML5	64
OML6	64
OML7	62

Table 3.5-4 presents the cumulative levels based on the available monitoring and project noise level data. This shows a maximum increase of 5 dBA.

TABLE 3.5-4
Summary of Cumulative Noise Levels (dBA)

Location	Nighttime Average L90 (10 PM to 7 AM)	Project Noise Level	Cumulative Noise Level	Predicted Increase
OML5	64	67	**69**	5
OML6	64	67	**69**	5
OML7	62	65	**67**	5

Given the overall net environmental benefits associated with the proposed changes to the project, PG&E requests that Condition of Certification NOISE-6 be revised to accommodate a 5 dBA increase, which is consistent with the level CEC Staff typically considers less than significant.

3.5.3 Affected Environment

No new potentially noise sensitive uses have been identified in the project area.

3.5.4 Laws, Ordinances, Regulations and Standards

The project is located within unincorporated Contra Costa County but within the sphere of influence of the City of Antioch. Since the project was first licensed, the County of Contra Costa and the City of Antioch have updated their General Plans.

3.5.4.1 Contra Costa County

The Noise Element of the January 2005 Contra Costa County General Plan provides the same goals and objectives as the 1996 General Plan analyzed by CEC Staff. Namely, levels of up to 70 dBA CNEL are considered conditionally acceptable for residential uses and up to 80 dBA CNEL for industrial uses.

3.6 Public Health

This section reviews the potential changes to the health risk impacts reviewed in the CC8 AFC and in the CEC Staff's Final Staff Assessment (FSA) resulting from the proposed amendment. The following areas were reviewed for impacts: construction, operation (acute non-cancer impact, chronic non-cancer impacts, and individual cancer impacts), cumulative impacts, compliance with LORS, and conclusion.

3.6.1 Construction

Proposed modifications that have the potential to affect the health risk impact due to construction activities include:

- Increased emissions due to the increase in construction activity and longer construction schedule, and
- Revised emission factors to reflect the change in off-road engine emission standards since the project was originally licensed.

The principal source of the construction public health impacts remains the diesel exhaust particulate emissions. For the original construction schedule, onsite construction equipment was estimated to emit 3.5 tons per year (tpy) of diesel particulate matter (DPM). The new construction schedule for the proposed modification to the project design will reduce diesel particulate emissions from construction equipment to 0.9 tpy, due to a decrease in PM_{10} emissions attributable to the application of Tier 2 off-road vehicle standards. The reduction in DPM will result in a proportional reduction in cancer risk from construction activities.

3.6.2 Operation

Proposed modifications that have the potential to affect the health risk assessment due to project operation include:

- Eliminating the cooling tower,
- Adding a small wet surface air cooled heat exchanger unit (WSAC), and
- Adding inlet air chillers to improve the performance of the CTGs under high-temperature conditions.

As discussed in the air quality section, these project changes will:

- Reduce PM10 emissions during project operation, and
- Have no effect on the air dispersion modeling results submitted in April 2001.

The proposed changes will not result in any increases in emissions or ambient impacts.

3.6.3 Acute Non-Cancer Impact

For the original project, a hazard index of 0.17 was estimated, which is well below the significance level of 1.0. The CEC concluded that no short-term adverse health effects were expected based on this hazard index. Since the proposed changes will not result in any changes in the acute health hazard index that was evaluated for the project as originally licensed, the CEC's determination is still valid.

3.6.4 Chronic Non-Cancer Impacts

For the original project, a hazard index of 0.04 was estimated, which is well below the significance level of 1.0. The CEC concluded that no long-term adverse health effects were expected based on this hazard index. Since the proposed changes would not increase project emissions or ambient impacts, the changes would not result in an increase in the chronic health hazard index that was evaluated for the project as originally licensed and the CEC's determination is still valid.

3.6.5 Individual Cancer Impacts

The proposed elimination of the cooling tower will have a minor effect on the modeled cancer risk from the project by eliminating one source of hazardous air pollutant emissions, resulting in a lower public health impact for the proposed design changes. The cancer risk from the project will remain below 1 in one million. The CEC originally indicated that at a level of less than one additional chance in one million of cancer over a lifetime, the project was considered to have a de minimis impact, or one that is essentially no impact.

3.6.6 Cumulative Impacts

For the original project, the CEC determined that no significant change in lifetime risk to any person was expected to result from the proposed changes to the CC8 project risk of 0.86 in one million, and that the increase did not represent any real contribution to the existing ambient risk in the Bay Area of 194 in one million. The cumulative impacts of the project are expected to be reduced with the implementation of the proposed changes, and as such, cumulative impacts will be lower.

3.6.7 Compliance with LORS

The proposed changes to the Gateway project design will be in compliance with all applicable LORS regarding long-term and short-term project impacts.

3.7 Worker Safety and Health

The Commission Decision found that the project would not result in significant impacts to worker health and safety with the implementation of the COCs. The elimination of the

cooling tower will reduce the potential worker health and safety impacts by eliminating a structure often constructed of combustible material (wood).

With the implementation of the Worker Safety and Health COCs and the preparation of the applicable plans, the project will comply with all applicable worker safety and health LORS.

3.8 Socioeconomics

The Commission Decision found that the project would not cause a significant adverse direct or cumulative impact on housing, employment, schools, public services or utilities. The proposed project changes would not materially alter the basis for this conclusion, after the implementation of the COCs.

The project as proposed complies with all applicable LORS.

3.9 Agricultural Resources

The project site is located in an industrial area in the City of Antioch's sphere of influence, in an unincorporated area of Contra Costa. The project area is industrial, with residential uses in the surrounding area. The proposed project changes, including the linear facilities are either on developed industrial land or in existing roadways. Therefore, no impacts to agricultural lands are expected.

3.10 Traffic and Transportation

3.10.1 Affected Environment

The proposed changes in the project design have altered the construction workforce estimates used in the licensing proceeding. Therefore, a new traffic and transportation analysis was warranted and is concluded in this section.

The number of Mirant operational employees (associated with the other Contra Costa power plant units) as well as the construction workers commuting during the construction and operation of the Gateway project may affect the following roadways in the vicinity of the project site:

- State Route 4 (SR-4)
- State Route 160 (SR-160)
- Wilbur Avenue

SR-4 and SR-160 are four-lane highways in the project vicinity. The project site can be accessed from SR-4 via SR-160 and SR-160/Wilbur Avenue interchange. Wilbur Avenue is a two-lane major arterial between Cavallo Road to the west and SR-160 to the east.
Table 3.10-1 identifies the existing roadway classifications, truck percentages, number of lanes, and design capacities for roadways that would serve the Gateway project. Highway capacities were based on 1,600 vehicles/lane/hour and arterial capacities were based on 900 vehicles/lane/hour.

TABLE 3.10-1
Roadway Descriptions

Roadway	Segment	Class[a]	Median	Trucks[b]	Number of Lanes	Design Capacity
SR-4	Hillcrest Avenue to SR-160	Highway	Divided	5.4%	4	6,400
SR-160	SR-4 and Wilbur Avenue	Highway	Divided	6.5%	4	6,400
SR-160	Wilbur Avenue and Antioch Regional Shoreline	Highway	Divided	6.5%	4	6,400
Wilbur Avenue	SR-160 to Cavallo Road	Arterial	Undivided	-	2	1,800

[a] Highway: A road with limited access, designed to serve regional through traffic.
Arterial Road: A road whose principal function is to serve major through-traffic movements between major traffic generators.

[b] 2004. Annual Average Daily Truck Traffic on the California State Highway System.
Accessed on June 26, 2006, from http://www.dot.ca.gov/hq/traffops/saferesr/trafdata/truck2004final.pdf

The City of Antioch General Plan Growth Management and Circulation Elements and the Contra Costa County General Plan Growth Management and Circulation Elements specify the Level of Service (LOS) standards for the City and the County maintained roadways. LOS C is the minimum acceptable LOS along the City and the County maintained roads in the project vicinity. LOS D threshold for roadway degeneration is acceptable for planning purposes on Caltrans maintained roadways. Table 3.10-2 lists the applicable LOS standards.

TABLE 3.10-2
LOS Standards

Land Use	Minimum Acceptable LOS	Range of V/C Ratios
Rural	Low C	0.70 – 0.74
Semi-Rural	High C	0.75 – 0.79
Suburban	Low D	0.80 – 0.84
Urban	High D	0.85 – 0.89
Central Business District	Low E	0.90 – 0.94

City of Antioch. November 24, 2003. City of Antioch General Plan. Accessed on October 30, 2006, from http://www.ci.antioch.ca.us/citygov/commdev/planningdivision/docs/Antioch_Adopted_General_Plan.pdf

Contra Costa County. January 18, 2005. Contra Costa County General Plan. Accessed on October 30, 2006, from http://www.co.contra-costa.ca.us/2005%20General%20Plan/General%20Plan.pdf

Peak hour distribution was determined for individual segments based on data obtained from Caltrans and City of Antioch Traffic Department (based on 2004 traffic counts for Wilbur Avenue). The LOS for each roadway segment was determined based on the afternoon peak volumes. Turn movements at the interchange and truck percentage data for Wilbur Avenue were not available. Traffic conditions were evaluated using the methodology of Transportation Research Board's 2000 *Highway Capacity Manual*. Table 3.10-3 lists peak hour traffic, average daily traffic (ADT), volume-to-capacity (V/C) ratios, and LOSs on the roadway segments and ramps that may be affected by the project during its construction and operation.

TABLE 3.10-3
Existing Traffic

Roadway	Segment	Peak Hour[a, b]	V/C	LOS
SR-4	Hillcrest Avenue to SR-160	3,150	0.49	A
SR-160	SR-4 and Wilbur Avenue	1,100	0.17	A
SR-160	Wilbur Avenue and Antioch Regional Shoreline	1,300	0.20	A
Wilbur Avenue	SR-160 to Cavallo Road	816[c]	0.45	A
Roadway	**Segment**	**ADT[d]**	**Peak Hour**	**LOS**
SR-160 NB	Off-Ramp at Wilbur Avenue	1,050	91	B
SR-160 NB	On-Ramp at Wilbur Avenue	1,750	152	B
SR-160 SB	Off-Ramp at Wilbur Avenue	1,400	121	B
SR-160 SB	On-Ramp at Wilbur Avenue	1,100	95	B

[a] 2005. Traffic Volumes on the California State Highways. Accessed on October 30, 2006, from http://www.dot.ca.gov/hq/traffops/saferesr/trafdata/2005all.htm
[b] 2006. Personal communication between Ed Franzen, Traffic Engineer with the City of Antioch, Public Works Department and Bojana Maric of CH2M HILL. November 7, 2006.
[c] Traffic counts on Wilbur Avenue near Viera Avenue. August, 2006
[d] 2005. Ramp Volumes on the California State Freeway System. Accessed on June 26, 2006, from http://www.dot.ca.gov/hq/traffops/saferesr/trafdata/05ramps/d42005ramp.PDF

AADT Annual Average Daily Traffic, ADT Average Daily Traffic, LOS Level of Service, V/C Volume to Capacity Ratio

Level of Service Criteria for Urban Streets, Highway Capacity Manual, TRB, 2000:

A = 0.00 – 0.60 Free flow; insignificant delays
B = 0.61 – 0.70 Stable operation; minimal delays
C = 0.71 – 0.80 Stable operation; acceptable delays
D = 0.81 – 0.90 Approaching unstable; queues develop rapidly but no excessive delays
E = 0.91 – 1.00 Unstable operation; significant delays
F = > 1.00 Forced flow; jammed conditions

The LOS for all roadways surrounding the proposed project site prior to construction is LOS B or better, which represents near-free-flow traffic operating conditions; therefore, all roadways operate at an acceptable LOS.

3.10.2 Environmental Consequences

The impact of the project is measured by the potential change in the LOS of surrounding roadway segments caused by the project. Traffic generated by the project was added to the existing peak hour volumes, and the resulting capacity impacts were assessed. This assessment was conducted only for the construction phase of the Gateway project since traffic generated by permanent employees and deliveries during facility operation will be minimal.

The average and maximum daily construction worker traffic at the site during construction were estimated to be approximately 250 and 400 workers per day, respectively. The average and maximum daily truck traffic at the site during construction were estimated to be approximately 10 and 25 trucks per day, respectively. Truck traffic will be spread throughout the workday with few deliveries during the peak hour. Therefore, their contribution to overall traffic impacts will be negligible. Table 3.10-4 summarizes the anticipated average and peak construction traffic.

TABLE 3.10-4
Estimated Construction Traffic

Vehicle Type	Average Daily Trips	Peak Daily Vehicle Trips
Construction Personnel and Office Staff	250	400*
Equipment Delivery Trucks	10	25

* Month 11 and Month 12

To provide a 'worst-case' analysis, it was assumed that the construction personnel will commute to the project site in private automobiles using a typical vehicle occupancy rate of 1.00 persons per vehicle (no carpooling). During the peak construction period, the project is expected to generate approximately 425 daily round-trips (400 daily construction worker round-trips and 25 equipment delivery truck round-trips).

It was assumed that approximately 80 percent of the construction related traffic will originate from within Contra Costa County and will arrive via SR-4. The remainder of the trips was assumed to originate in Solano County and will arrive via SR-160. The addition of the forecasted peak project traffic is not anticipated to result in a significant change to operation of roadways in the Gateway project vicinity and all segments are expected to continue to operate at acceptable LOS levels. The results of this analysis are presented in Table 3.10-5.

TABLE 3.10-5
Construction Traffic

Roadway	Segment	Peak Hour	V/C	LOS
SR-4	Hillcrest Avenue to SR-160	3,490	0.55	A
SR-160	SR-4 and Wilbur Avenue	1,440	0.23	A
SR-160	Wilbur Avenue and Antioch Regional Shoreline	1,385	0.22	A
Wilbur Avenue	SR-160 to Cavallo Road	1,241	0.69	B (from A)*

Roadway	Segment	ADT	Peak Hour	LOS
SR-160 NB	Off-Ramp at Wilbur Avenue	1,390	431	B
SR-160 NB	On-Ramp at Wilbur Avenue	1,835	237	B
SR-160 SB	Off-Ramp at Wilbur Avenue	1,485	206	B
SR-160 SB	On-Ramp at Wilbur Avenue	1,440	435	B

***** Indicates change in LOS.

3.10.3 Compliance with LORS

Based on a review of the applicable LORS and the project's projected traffic and transportation impacts, the project is consistent with the applicable LORS.

3.10.4 Cumulative Impacts

The Contra Costa County Transportation Authority Congestion Management Plan lists the following roadway improvement projects in the vicinity of the project site:

- Wilbur Avenue Bridge Widening
- Wilbur Avenue Widening
- SR-4 Bypass Widening

Wilbur Avenue Bridge Widening Project. This project is located approximately 1.5 miles west of the project site. The Wilbur Avenue Bridge will be widened to accommodate two additional travel lanes. This project is currently in the design phase and scheduled for construction in 2007/2008. It is not anticipated that the Wilbur Avenue Bridge Widening project will have any impact on the construction or operation.

Wilbur Avenue Widening Project. This project involves widening of Wilbur Avenue immediately next to the project site. Wilbur Avenue will be widened from two to four lanes east of the Burlington Northern Santa Fe (BNSF) railroad tracks to SR-160. This project is in the Metropolitan Transportation Commission's T-2030 Plan; however, funding has not been secured and the estimated completion date is unknown. It is possible that some of the Wilbur Avenue Widening project could coincide with the construction of the project; however, additional details are not available at this time. It is not anticipated that the Wilbur Avenue Bridge Widening project will have any impact on the CC8 construction or operation.

SR-4 Bypass Widening Project. This project is located east of the project site. The project consists of widening of the SR-4 Bypass from four to six lanes between SR-4/SR-160 to Lone Tree Way. The design specifications have been completed for this project and the estimated completion date is January 2011. It is possible that some of the SR-4 Bypass Widening project work will coincide with the construction of the project; however, additional details are not available at this time.

There are no other proposed developments/projects in the vicinity of the Gateway project site.

3.11 Visual Resources

This section analyses the potential impacts to visual resources that would occur as a result of the Gateway project modifications proposed herein as compared to the impacts that were associated with the CC8 project as approved by the CEC in May 2001.

Section 3.11.1 describes the environment that would be potentially visually affected by the project modifications, and highlights changes in the regional and local landscape setting that have occurred since Mirant ceased construction activities in early 2002. Section 3.11.2 describes changes in the project configuration as well as dimensions of the larger elements of the project. Section 3.11.3 addresses cumulative impacts. Section 3.11.4 describes measures to mitigate any potentially significant visual effects associated with the project modifications. Section 3.11.5 summarizes updated policies and plans governing visual resources for the Gateway project site.

The analysis of potential visual effects associated with the project modifications is based on both site reconnaissance and review of technical data, including project maps and drawings provided by the project engineers (Black and Veatch), aerial and ground level photographs of the project area, and visual simulations comparing the CEC-approved project and the project as modified by PG&E. Local planning documents were also evaluated. Field observations were conducted in October 2006 to document and update existing visual conditions in the project area and to re-evaluate potentially affected sensitive viewing locations. Key observation points evaluated as part of this process are shown on Figure 3.11-1.

3.11.1 Affected Environment

This section discusses the changes to the site and surrounding area which have occurred since 2001 that affect the visual quality of the project and environs.

3.11.1.1 Regional and Local Landscape Setting

Since the CEC's approval of the project in 2001, the City of Antioch and the surrounding region have experienced both residential and commercial growth while industrial uses have declined. According to the U.S Census, Antioch grew by over 10 percent in population from 2000 to 2005. To the east, the City of Oakley has also experienced growth in terms of new residential development.

A number of hillside residential subdivisions have built since the project approval, in particular near upper Hillcrest Avenue to the south of the site, approximately 2.5 miles from the site. Additional commercial development has occurred directly south of the site along 18th Street near the Highway 160 interchange, and both commercial and residential development have continued to fill in the properties along 18th Street. Some of the properties immediately adjacent to the site have also undergone changes. Directly to the west of the site, the East Mill and West Mill properties, the sites of former Gaylord Container Corporation paper and pulp manufacturing plants, are currently undergoing cleanup and dismantling (State of California, Department of Toxic Substances Control, 2005 and 2006). Other minor changes in grading have occurred at the nearby San Joaquin Yacht Harbor. (See Photo d, Figure 3.11-2).

3.11.1.2 Project Site

After approval by the CEC, Mirant conducted various site preparation and construction activities at the project site, including the removal of a number of mature oak trees on the site to the north and west of the project area. Site grading activities also resulted in the creation of a large stockpile of soil near the southern edge of the project site. This stockpile remained in place following suspension of construction activities by Mirant in February 2002.

3.11.1.3 Project Site Visibility

As described in the original AFC submittal, terrain along the San Joaquin River is relatively flat allowing open views towards the project from a wide area.[12] Intervening mature

[12] Dames and Moore, 2000, pg 8.11-1.

SOURCE: Environmental Vision

NOTE: KOP #8 is not included in visual character photographs

0 100 200 feet

3 → Key Observation Point (KOP)

(2) → Simulation Viewpoint

FIGURE 3.11-1
KOP LOCATIONS
PG&E GATEWAY GENERATING STATION
CONTRA COSTA, CALIFORNIA

CH2MHILL

061115

vegetation and structures screen views from some locations. These conditions remain largely unchanged since the CEC's approval of the project in May 2001.

3.11.1.4 Sensitive Viewing Areas and Key Public Viewpoints Sensitive Viewing Areas and KOPs

Visually sensitive viewing areas were re-photographed in October 2006, to update existing conditions. The new photographs include seven of the eight KOPs (Key Observation Points) from the original AFC. These are depicted in Figures 3.11-2 through 3.11-3. An additional KOP was added in the FSA to address concerns by users of the adjacent Sportsman's Yacht Harbor.

Antioch Regional Shoreline Park (KOP #1). Visible from KOP #1, vegetation located near the base of the bridge has matured since CEC approval of the project. This vegetation provides somewhat more screening of some project elements. Other vegetation along the waterfront has also matured and provides more screening of the base of the existing facility.

18th Street/Wilson Street and Surrounding Neighborhood (KOP #2). Trees to the south of the site have matured somewhat since the project was approved by the CEC in 2001, providing additional project screening. The 18th Street corridor includes new commercial and residential development with a concentration of commercial development around the Highway 160 interchange. However, the view from the original KOP #2 is still an unobstructed vista across vineyards.

Viera Avenue and Santa Fe Avenue and Surrounding Neighborhood (KOP #3). As shown in Photo b in Figure 3.11-2, this view is largely unchanged since 2001. Residents of this area have open views across vineyards to the site. Views include the existing stacks and tanks on the project site as well as nearby warehouse structures. These views are occasionally interrupted by passing freight trains along the Atchison Topeka and Santa Fe rail line.

Marinas/Harbors (KOP #4). Photo c in Figure 3.11-2 shows a view from the San Joaquin Yacht Harbor entrance. This view is modified slightly from the 2000 AFC to take into account the view from the private roadway rather than on private property where caretakers reside. The site of the AFC visual simulation has undergone extensive grading, and at the time the updated photograph was taken, construction machinery was present in the foreground (visible to the right of the new photograph and in Photo d). In this view, the stack of the existing facility appears prominently in the central foreground of the image.

Hillcrest Avenue and Surrounding Neighborhood and State Route 4 (KOP #5). This image reproduces the AFC photograph taken from the base of a transmission line on a hill above the residential area. Since the project's approval more hillside residential development has occurred. In particular, new developments have been built along upper Hillcrest Avenue directly south of the project.

State Route 160 (KOP #6 and #7). Photos g and h on Figure 3.11-3 show views from southbound State Route 160 towards the shoreline of the San Joaquin River and Mt. Diablo. As described in the CEC's Final Staff Assessment (FSA) for the CC8 Project, views of the project area southbound on the Antioch Bridge would be possible from taller vehicles. (Photo g in Figure 3.11-3 was taken from a truck.) Views from lower passenger cars would be obstructed by the guard rail and barrier on the bridge.

San Joaquin River (KOP #8). While views from the river remain largely the same since the original project approval, the dismantling and clean-up of the adjacent former East Mill and West Mill sites has resulted in minor changes. The changes have decreased the industrial character of the San Joaquin riverfront to a degree because some industrial elements of these sites have been removed. For purposes of this Amendment, this view was not re-photographed in 2006.

3.11.2 Environmental Consequences

3.11.2.1 Analysis Procedure

This analysis of the visual effects associated with the project modifications proposed in this Amendment is based on field observations conducted in October 2006 and a review of the following information: project drawings and data, the original AFC and approved FSA visual assessments, computer-generated visual simulations from representative viewpoints, local planning documents, ground and aerial photography, and topographic maps of the project area.

Half-page size photographs are presented on 11x17 inch sheets to show the 'before' and 'after' conditions from two representative viewpoints or KOPs. The KOP locations are shown in Figure 3.11-1. Because the CEC-approved project is considered the baseline visual condition for purposes of this Amendment, the 'before' view is represented by a visual simulation of the project as approved by the CEC in its Final Decision dated May 2001. This 'before' image was created using portions of the digital model provided by Black and Veatch and substituting the Air Cooled Condenser (ACC) with a basic computer rendering showing the original approved cooling tower massing. Vapor plumes associated with the wet cooling tower in the CEC-approved project (which were considered a significant visual impact) are not shown in the simulated 'before' images included in this Amendment. It is important to note that such vapor plumes will not occur under the proposed project, due to the selection of the ACC. The visual simulation of the 'after' conditions from the selected KOP locations provides a clear image of the location, scale, and visual appearance of the current proposed project.

The computer-generated simulations are a result of an objective analytical and computer modeling process described briefly below. The images are accurate within the constraints of the available site and project data.

Site reconnaissance was conducted to view the site and surrounding area to re-evaluate potential key viewpoints and to take representative photographs of existing conditions. Site photography was shot using a single lens reflex (SLR) digital camera with a 50mm lens (view angle of 40 degrees) and a 28mm lens (view angle of 64 degrees). Two KOP photographs were selected for visual simulation purposes—KOP #1, the fishing pier at Antioch Regional Shoreline Park and KOP #2, 18th Street near Wilson. A 50mm lens was used to photograph these two KOPs.

For the two KOPs, computer modeling and rendering techniques were used to produce the simulation images. Existing topographic and site data provided the basis for developing an initial digital model. Black and Veatch, the project engineers provided site plans and digital data for the proposed facility. These were used to create three-dimensional digital models of

a. KOP #1: Fishing Pier, Antioch Regional Shoreline Park

b. KOP #2: 18th Street near Wilson Street

c. KOP #4: Inside the entrance to San Joaquin Yacht Harbor (28mm)

d. Adjacent to KOP #4 on San Joaquin Yacht Harbor property (28mm)

FIGURE 3.11-2
VISUAL CHARACTER PHOTOS
PG&E GATEWAY GENERATING STATION
CONTRA COSTA, CALIFORNIA

SOURCE: Environmental Vision

e. KOP #3: Viera Avenue and Santa Fe Avenue

f. KOP #5: Hillcrest Avenue and surrounding neighborhoods

g. KOP #6: State Route 160 southbound

h. KOP #7: State Route 160 southbound on the Antioch Bridge

FIGURE 3.11-3
VISUAL CHARACTER PHOTOS
PG&E GATEWAY GENERATING STATION
CONTRA COSTA, CALIFORNIA

SOURCE: Environmental Vision

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the proposed facility. These models were combined with the digital site model to produce a complete computer model of the generating facility.

For each of the simulation viewpoints, the viewer location was digitized from topographic maps and scaled aerial photos, using 5 feet as the assumed eye level. Computer 'wire frame' perspective plots were overlaid on photographs to verify scale and viewpoint location. Digital visual simulation images were then produced based on computer renderings of the 3-D model combined with digital versions of the selected site photographs. The final 'hardcopy' visual simulation images contained in this Amendment were printed from the digital image files and produced in color on 11 x 17 inch sheets as Figures 3.11-4 and 3.11-5.

The visual impact assessment was based on evaluation of the changes to the approved project visual conditions that would result from construction and operation of the project, as modified by the project description changes described in Section 2 of this Amendment.

These changes were assessed, in part, by evaluating the computer-generated visual simulations for the proposed project, and comparing them to the approved project visual conditions. In developing an assessment of the visual changes, consideration was given to several factors:

- specific changes in the affected visual environment's composition and character
- affected environment's visual context
- extent to which the affected environment includes features that have been designated in plans and policies for protection for special consideration
- numbers and types of affected viewers
- duration of the view

With respect to determining the significance of the anticipated changes under the California Environmental Quality Act (CEQA), these changes were evaluated in terms of the criteria provided by the CEQA guidelines. Appendixes G and I of the guidelines indicate that a project will have a significant effect on the environment if it will:

- Have a substantial, adverse effect on a scenic vista;
- Substantially damage scenic resources, including, but not limited to trees, rock outcroppings, and historic buildings within a state scenic highway;
- Substantially degrade the existing visual character or quality of the site and its surroundings; or
- Create a new source of substantial light or glare, which will adversely affect day or nighttime views in the area.

3.11.2.2 Project Appearance

Section 2.0 of this Amendment, contains a detailed description of the proposed changes to the project including a layout drawing (Figure 2-1). As described in this section, many of the major project structures including the HRSGs and stacks, administration buildings, steam turbines, the switchyard, and transmission towers, have the same location and massing, as

approved by the CEC in 2001. The key change that will affect the visual appearance of the project is the new ACC structure. The ACC structure will be taller and have a larger footprint than the original ten-cell wet cooling tower. However, the ACC will eliminate the vapor plumes associated with the approved project.

As noted in the Revised Treatment Plan prepared by Mirant and submitted to the CEC in August 2001 the project structures will be painted several shades of a neutral, non-reflective gray color, and the stacks will be painted a non-reflective gray material[13]. Table 3.11-1 provides a summary of the major proposed structures of the project facility that are likely to affect visual resources. The table includes the approximate dimensions and heights of the major projects components. Other lower sheds and mechanical equipment are not included in this table. With the exception of the ACC, the structures are the same in overall appearance as in the CEC-approved project. Switchyards and transmission towers are also not included in the table as they are identical in dimensions to the approved project.

TABLE 3.11-1
Summary of Major Proposed Structures

Project Component (#)	Dimensions (length x width)	Height
Exhaust stacks (2)*	Approx 20' diameter	Approx. 195'
Heat recovery steam generator (HRSG) 2 *	Approx. 50' x 110'	Approx 120'
Air cooled condenser (ACC)	250' x 281'	Approx 130'6'
Steam turbine *	Approx. 24' x 53'	Approx. 71'-0'

* These structures are the same in overall appearance as in the approved project.

3.11.2.3 Assessment of Visual Effects

The most physically substantial project component, the ACC, will be located on the southern portion of the site away from the waterfront. The ACC will allow the project to operate without emitting vapor plumes. Plumes were identified as a significant visual impact in the FSA. The steam turbine generator building that was included in the original AFC submittal is no longer proposed; it was removed prior to the FSA and project approval.

Two 'before' and 'after' views of the project are presented on Figures 3.11-4 and 3.11-5. Figure 3.11-4 shows the view from KOP #1, the public fishing pier at the Antioch Regional Shoreline Park located approximately 0.4 miles to the east of the project. Figure 3.11-5 shows the view from KOP #2, 18th Street near Wilson Street approximately 0.75 miles to the south of the project.

The 'before' image from KOP #1 shows the CEC-approved project (Figure 3.11-4). The stacks and structures of the existing Contra Costa Power Plant units are visible toward the right side of the view. The HRSGs and stacks associated with the approved project are visible above waterfront structures toward the center of the image. The approved ten-cell wet cooling tower structure is almost completely screened by columns and mature vegetation at the base of the Antioch Bridge on the left side of the photo. Plumes that would

[13] Mirant 2001.

Approved Project from KOP #1 - Fishing Pier, Antioch Regional Shoreline Park

SOURCE: Environmental Vision 2006

Visual Simulation of Proposed Project

SOURCE: Environmental Vision 2006

FIGURE 3.11-4
CEC APPROVED PROJECT AND PROPOSED PROJECT
ANTIOCH REGIONAL SHORELINE PARK - KOP #1
PG&E GATEWAY GENERATING STATION
CONTRA COSTA, CALIFORNIA

ENVIRONMENTAL VISION

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Approved Project from KOP #2 - 18th Street near Wilson Street

SOURCE: Environmental Vision 2006

Visual Simulation of Proposed Project

SOURCE: Environmental Vision 2006

NOTE: Simulation does not portray new project landscaping

FIGURE 3.11-5
CEC APPROVED PROJECT AND PROPOSED PROJECT
18TH STREET NEAR WILSON STREET - KOP #2
PG&E GATEWAY GENERATING STATION
CONTRA COSTA, CALIFORNIA

ENVIRONMENTAL VISION

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occur as part of the approved project are not simulated in the existing view image. The 'after' KOP #1 image shows the ACC structure on the left side of the view. The ACC is visible behind mature trees at the base of the Antioch Bridge. Intervening vegetation and the bridge columns provide partial screening of the new structure. The new structure would partially obstruct the view toward the hills from this location; however, an open vista of the hills would continue to be available. No plumes would be present in the proposed project. The elimination of plumes is considered a beneficial visual effect. When the overall visual effect is considered, the proposed project would introduce an additional structure in a view that includes a variety of large scale industrial structures. In this respect the project represents an incremental visual change which would not substantially alter the existing composition or character of the view experienced from KOP #1. Considering the insignificant incremental visual change in relation to the elimination of the visible plumes from the cooling tower, the project modifications will result in a net visual benefit of the project as originally licensed.

The 'before' image from KOP #2 shows the CEC-approved project on the right side of the photo just behind the existing lattice transmission tower (Figure 3.11-5). HRSGs and stacks as well as portions of the wet cooling tower structure are visible from this vantage point. The existing Contra Costa power plant structures and stacks appear prominently near the center of the view. The 'after' image from KOP #2shows the new ACC to the right of the existing transmission tower. The new structure would appear visually prominent, although the base of the structure is partially screened by existing mature vegetation situated to the south of the site. The new ACC structure would obstruct a portion of the view toward the Antioch Bridge; however, a substantial portion of the bridge would remain visible from this vantage point. The visual impact of plumes associated with the CEC-approved project would not occur. Similar to the effect on KOP#1, the project would introduce an additional structure in a view that includes a variety of large scale industrial structures. The overall visual effect of the project would be a relatively minor and incremental change to existing visual conditions with the beneficial effect of eliminating visible plumes.

As part of the proposed project, trees will be planted to partially screen views of the project. This will include fast-growing trees planted on site along the eastern, northern, and southern property lines. On the eastern side of the property adjacent to the Sausalito Ferry, the planting will be on a berm to increase the tree height. Additionally attractive groundcover will be installed on the eastern portion of the landscaped area. It should be noted that the Figure 3.11-4 and 3.11-5 'after' images do not portray proposed project landscaping.

3.11.3 Cumulative Impacts

The CEQA Guidelines (Section 15355) define cumulative impacts as 'two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts.'

The CEQA Guidelines further note that:

> The cumulative impact from several projects is the change in the environment which results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future

projects. Cumulative impacts can result from individually minor, but collectively significant, projects taking place over a period of time.

The initial AFC and FSA identified the project as increasing the industrial character of this portion of the San Joaquin shoreline. Since the project approval, a number of industrial sites, including the adjacent East and West Mill sites, have begun clean-up and removal of industrial facilities. However, given the presence of remaining facilities under cumulative conditions, the project would generally be compatible with the area's overall visual character.

3.11.4 Mitigation Measures

Various measures to mitigate the visual impact of the project were included in the project approved in 2001. These primarily included additional planting, berms, and color treatments. These measures are generally applicable to the project modifications proposed in this Amendment.

3.11.5 (LORS) Relationship to Plans, Laws, Ordinances, Regulations and Standards

3.11.5.1 Introduction

No federal programs addressing visual quality that pertain to this project were identified. State scenic highway programs were addressed in the AFC and have not changed since project approval. However, since the 2000 submittal, the Contra Costa General Plan has been updated (in 2005). Table 3.11-2 lists the LORS that are pertinent to the project. Portions of these documents that pertain to visual quality are described in more detail in Table 3.11-3.

TABLE 3.11-2
Laws, Ordinances, Regulations, and Standards Applicable to Visual Resources

LORS	Amended AFC Section Explaining Conformance	Agency Contact
State Scenic Highways, 1963.	Previously addressed in AFC	California Department of Transportation District 4 111 Grand Avenue Oakland, CA 94612 (510) 286-4444
Contra Costa County General Plan, 2005.	Section 3.11.5.2	Community Development Department, Contra Costa County 651 Pine Street, 4th Floor - North Wing Martinez, CA 94553 (925) 335-1290

3.11.6 Contra Costa County General Plan, January 2005

Table 3.11-3 describes provisions in the Contra Costa General Plan that pertain to visual quality. Similar to the City of Antioch General Plan, the county calls for preservation and enhancement of scenic views of Mt. Diablo, ridgelines, and the San Joaquin River. Additionally, the county general plan delineates scenic highway requirements for the State

Route 4 Bypass which includes the road up to the SR160/Antioch bridge. This route is within a quarter of a mile from the project.

TABLE 3.11-3

Contra Costa General Plan Policies Pertinent to Visual Quality

	Project Conformance
3. Land Use Element **Goal 3-C:** To encourage aesthetically and functionally compatible development which reinforces the physical character and desired images of the County.	Yes. The project is proposed for an existing power plant site with visually prominent structures and will not impact an undeveloped area.
Policies: Community Identity and Urban Design **Policy 3-18:** Flexibility in the design of projects shall be encouraged in order to enhance scenic qualities and provide for a varied development pattern.	Yes. The project is proposed for an existing power plant site with visually prominent structures and will not impact an undeveloped area.
5. Transportation and Circulation Element **Definition and Maps of Scenic Routes** 'A scenic route is a road, street, or freeway which traverses a scenic corridor of relatively high visual or cultural value. It consists of both the scenic corridor and the public right-of-way.' (p.5-20) **Scenic Resources Goal 5-R:** To identify, preserve and enhance scenic routes in the County.	Yes. The project is proposed for an existing power plant site with visually prominent structures and will not impact an undeveloped area.
Policy 5-3. Provide special protection for natural topographic features, aesthetic views, vistas, hills and prominent ridgelines at 'gateway' sections of scenic routes. Such 'gateways' are located at unique transition point s in topography or land use, and serve as entrances to regions of the County.	Yes. The project does not obscure views of hills or ridgelines from the SR 160/Antioch bridge. Views of the San Joaquin River are only minimally affected from Highway 4.
9. Open Space Element **9. 6 Scenic Resources** **Goal 9-12.** To preserve the scenic qualities of the San Francisco Bay/Delta estuary system and the Sacramento-San Joaquin River/Delta shoreline. **Scenic Resource Implementation Measures** 9-e. Develop and enforce guidelines for development along scenic waterways to maintain the visual quality of these areas. 9-f. Prepare a corridor study in which an appropriate scenic corridor width will be defined along all proposed scenic routes. 9-g. Prepare a visual analysis of proposed scenic routes to identify views of significant or cultural value. 9-h. Identify and designate 'gateways' within the scenic routes which are located at unique transition points in topography or land use and serve as entrances to regions of the County.	Yes. The project is proposed for an existing power plant site with visually prominent structures and will not impact an undeveloped area.

3.11.7 References

California Energy Commission. 2001. *Final Staff Assessment: Contra Costa Power Plant Unit 8 Project.* Application For Certification (00-AFC-1), Contra Costa, California. March 2001.

Contra Costa County. 2005. General Plan 2005-2020. January 2005. Online at: http://www.ci.antioch.ca.us/CityGov/CommDev/PlanningDivision/. Site accessed on 11/6/2006.

Dames and Moore. 2000 'Section 8.11 Visual Resources.' *Application For Certification: Contra Costa Power Plant Unit 8 Project.*

Mirant. 2001 'Contra Costa Unit 8, Condition of Certification VIS-1, Revised Treatment Plan (August 2001), June 29, 2001.

State of California, Department of Toxic Substances Control. 2006. *Envirostor Database.* Online at: http://www.envirostor.dtsc.ca.gov/public/. Site accessed on 11/6/2006.

State of California, Department of Toxic Substances Control. 2005. *Public Involvement Fact Sheet.* August 2005. Online at: http://www.dtsc.ca.gov/HazardousWaste/Projects/upload/Gaylord_FS_Update.pdf

U.S. Census Bureau. 2005 Population Estimates. Online at: http://www.census.gov. Site accessed on 11/6/2006.

3.12 Hazardous Materials Management

The elimination of the river water as the supply source for the project reduces the volume of water treatment chemicals used and stored on the site during operation. Table 3.12-1 presents the volumes and locations of the hazardous materials expected to be stored onsite. A comparison of the licensed storage volumes shows that the proposed project design changes reduces the volume of sulfuric acid by approximately 92 percent and the sodium hydroxide volume by over 97 percent.

The Commission Decision found that the adoption of the 7 Hazardous Materials COCs would ensure that project impacts are protective of the public[14]. The proposed changes reduce the volume of hazard materials required on site and therefore, reduces the potential impacts of the project below the levels analyzed in the licensing proceeding.

With the implementation of the hazardous material COCs, the project is expected to comply with all applicable hazardous materials handling LORS.

[14] Contra Costa Unit 8 Application for Certification, Commission Decision (P-800-01-18), pg 37.

TABLE 3.12-1
Hazardous Materials to be Added at CCPP During Operational Phase

Material	CAS Number	Location	Hazardous Characteristics	Maximum Quantity On-site	Regulatory Thresholds (lbs)			
					Cal-ARP	Federal RQ	Federal TPQ	Federal TQ
Aqueous Ammonia (29%)	7664-41-7	Selective catalytic reduction	Corrosive	285,000 lb	500	100	500	20,000
Sulfuric Acid	7664-93-9	WSAC, evaporative pre-cooler	Corrosive	500 gal.	1,000	1,000	1,000	–
Sodium Hypochlorite	7681-52-9	WSAC	Corrosive, Toxic	500 gal.	–	100	–	–
Scale Inhibitor	9011-14-7	WSAC, evaporative pre-cooler	Corrosive	500 gal.	–	–	–	–
Sodium Bisulfite	7631-90-5	Fire Pump Enclosure	-	500 gal.	–	–	--	–
Stabilized Bromine (Stabrex)	1310-73-2	Fire Pump Enclosure	Corrosive, Toxic	400 gal.	--	--	--	--
Corrosion Inhibitor (nitrite or molybdate)	-	Closed loop cooling water	Corrosive	55 gal.	–	–	–	–
Trisodium Phosphate	7601-54-9	1 in Admin. Bldg chemical room and 1 outside	Toxic	1,000 lb	–	5,000	–	–
Aqueous Ammonia (29%)	7664-41-7	1 in Admin. Bldg chemical room and 1 outside	Corrosive	55 gal.	500	100	500	20,000
Carbohydrazide	497-18-7	1 in Admin. Bldg chemical room and 1 outside	Toxic	55 gal	--	--	--	--
Hydrazine	302-01-2	1 in Admin. Bldg chemical room and 1 outside	Toxic	500 lbs.	15,000	15,000	1,000	–

3.13 Waste Management

The overall construction waste management impacts associated with the Gateway project are expected to significantly decrease over those impacts analyzed in the CC8 Commission Decision. Specifically, the elimination of the cooling tower eliminates the wastewater discharge to the San Joaquin River. Additionally, the elimination of some plant equipment (i.e., cooling tower and water treatment systems) reduces the volume of waste generated during construction and operation. Therefore, the proposed project changes are expected to result in an environmental benefit in the waste management impacts over those analyzed during the CC8 licensing proceeding.

As proposed, the project is expected to comply with all applicable LORS.

3.14 Water Resources

The CC8 project, as approved by the CEC, estimated using between 5,000 and 37,500 gallons per minute of river water for cooling.[15] The elimination of San Joaquin River water for this purpose eliminates the water resource impacts associated with this use. PG&E's decision to use dry cooling for the Gateway project eliminates a significant portion of the project's water use, resulting in a significant reduction in water resource-related impacts over those analyzed during licensing.

Impacts associated with construction and operation of the water supply and water discharge pipelines are not expected to impact water resources due to the urban, highly disturbed nature of the areas. Any potential impacts would be mitigated by implementation of the Water & Soil Conditions of Certification presented in the Commission Decision (as amended in Section 4 of this amendment petition).

The project as proposed is expected to comply with all applicable water resources LORS.

3.15 Geologic Hazards and Resources

The Commission Decision found that the project would not have an adverse significant impact on geologic resources.[16] The proposed changes to the project design do not alter the basis for this conclusion. Additionally, implementation of the geologic resources COCs will ensure the project as proposed will not result in significant adverse impacts.

The project as proposed is expected to comply with all applicable geologic hazard and resources LORS.

[15] Contra Costa Unit 8 Application for Certification, Commission Decision (P-800-01-18), pgs 99 and 114.

[16] Contra Costa Unit 8 Application for Certification, Commission Decision (P-800-01-18), pg 122.

3.16 Paleontological Resources

The Commission Decision found that the project would not have an adverse significant impact on paleontological resources[17]. The proposed changes to the project design do not alter the basis for this conclusion. Additionally, implementation of the paleontological resources COCs will ensure the project as proposed will not result in significant adverse impacts.

The project as proposed is expected to comply with all applicable paleontological resources LORS.

3.17 Cumulative Impacts

This Amendment will not change the assumptions or conclusions made in the Commission Decisions the proposed design changes will not result in cumulative impacts not already analyzed by the Commission.

3.18 Laws, Ordinances, Regulations, Standards

The Commission Decision certifying the Project concluded that the project complied with all applicable LORS. As shown above, the potential impacts from this Amendment will be equal to or less than the impacts analyzed in the Commission Decision.

[17] Contra Costa Unit 8 Application for Certification, Commission Decision (P-800-01-18), pg 122.

SECTION 4

Proposed Modifications to the Conditions of Certification

Consistent with the requirements of the CEC Siting Regulations Section 1769 (a)(1)(A), this section addresses the proposed modifications to the project's Conditions of Certification.

The proposed modifications to the applicable of Conditions of Certification are presented in Appendix 4.

SECTION 5

Potential Effects on the Public

Consistent with the requirements of the CEC Siting Regulations Section 1769 (a)(1)(G), this section addresses the proposed Amendment's effects on the public.

The proposed project design changes are expected to result in a significant environmental benefit due to the use of dry cooling and elimination of the San Joaquin River water supply. Therefore, impacts to the public are expected to be significantly lower than those analyzed during the license proceeding for the project.

SECTION 6

List of Property Owners

Consistent with the CEC Siting Regulations Section 1769(a)(1)(H), this section lists the property owners affected by the proposed modifications are presented in Appendix 5.

SECTION 7

Potential Effects on Property Owners

Consistent with the CEC Siting Regulations Section 1769(a)(1)(I), this section addresses potential effects of the proposed Amendment on nearby property owners, the public, and parties in the application proceeding.

The proposed project design changes are expected to result in a significant environmental benefit due to the use of dry cooling and elimination of the San Joaquin River water supply and discharge to the river. Therefore, impacts to property owners are expected to be lower than those analyzed during the license proceeding for the project. The operational impacts of the proposed design changes will not result in significant unmitigated environmental impacts and the proposed changes will reduce freshwater consumption significantly.

APPENDIX 3.1-1

Revised Air Quality Construction Emission Estimates

Construction Equipment Schedule

Construction Equipment Usage

Equipment	Fuel	Hrs/Day	Days/Wk	Days/Yr	Installation Months																									Totals	12-Month Avg	12-Month Peak
					1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25			
Hydraulic and Large Mast Cranes (194 HP)	CARB Diesel	4.3	5	260	1	4	5	6	6	6	9	11	13	14	14	14	14	12	11	9	8	8	8	7	6	5	3	2	2	198.00	7.92	14.00
Dump truck (658 HP)	CARB Diesel	2.5	5	260	1	3	4	4	4	4	5	5	5	4	2	2	0	0	0	0	0	0	0	0	0	1	1	1	1	47.00	1.88	5.00
Bulldozer (134 HP)	CARB Diesel	5.7	5	260	0	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9.00	0.36	1.00
Front-end loader (71 HP)	CARB Diesel	3.8	5	260	0	1	2	2	2	2	2	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	16.00	0.64	2.00
Haul truck (658 HP)	CARB Diesel	2.5	5	260	2	3	4	6	6	6	8	9	11	11	12	9	7	7	6	6	7	7	7	6	5	4	3	3	2	157.00	6.28	12.00
Backhoe (71 HP)	CARB Diesel	3.8	5	260	1	2	2	2	2	2	2	2	2	2	2	2	0	0	0	0	0	0	0	0	0	1	1	1	1	27.00	1.08	2.00
IC Air Compressor (37 HP)	CARB Diesel	4.8	5	260	1	1	2	2	2	2	4	4	4	4	4	4	3	2	2	2	2	2	2	2	2	2	1	1	1	58.00	2.32	4.00
Roller/Compactor (99 HP)	CARB Diesel	5.9	5	260	0	0	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	1	1	1	1	14.00	0.56	1.00
Pickup truck (none given)	CARB Diesel	8	5	260	4	4	4	4	4	4	9	9	10	10	13	13	11	9	10	8	7	7	7	7	7	8	5	5	5	184.00	7.36	13.00
Forklift (none given)	CARB diesel	8	5	260	0	2	2	2	2	2	5	5	6	6	7	7	6	5	4	4	3	3	3	3	3	3	2	2	2	89.00	3.56	7.00
Bobcat (84 HP)	CARB diesel	3.5	5	260	0	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	1	1	1	1	15.00	0.60	1.00
JLG (none given)	CARB Diesel	8	5	260	0	2	4	4	4	4	8	11	14	14	16	17	17	15	16	16	15	15	14	14	13	11	5	4	1	254.00	10.16	17.00
Welders (35 HP)	CARB Diesel	4.5	5	260	4	5	4	4	4	4	8	9	9	9	10	10	8	6	5	5	5	5	5	5	5	5	3	3	3	143.00	5.72	10.00
Fuel truck (658 HP)	CARB Diesel	2.5	5	260	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	24.00	0.96	1.00
Water Truck, 250 HP	CARB Diesel	2.5	5	260	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	25.00	1.00	1.00

APPENDIX 3.1-2

Wet Surface Air Cooled Heat Exchanger Emission Estimates

Calculation of Wet SAC Emissions
Contra Costa 8 Relicense

Typical Worst-Case Design Parameters	
Water Flow Rate, 10E6 lbm/hr	2.59
Water Flow Rate, gal/min	5,180
Drift Rate, %	0.0030
Drift, lbm water/hr	77.67
PM10 Emissions based on TDS Level	
TDS level, ppm (based on 5 COC)	2500
PM10, lb/hr	0.19
PM10, lb/day	4.7
PM10, tpy	0.39

Based on 4000 hrs/yr

APPENDIX 3.1-3

Screening Air Dispersion Modeling Results Summary

Results of the Unit Impact and Turbine Screening Analysis
Contra Costa Unit 8

Turbine Case	Modeled Unit Impact, ug/m3 per 2.0 g/s				
	1-hr	3-hr	8-hr	24-hr	annual
	1997 Met Data				
1	5.44379	3.50421	2.14595	1.16194	0.03763
2	7.11763	5.54921	3.42556	2.05387	0.05006
3	10.10796	7.23675	5.00943	2.86704	0.06689
4	5.77552	3.88555	2.38499	1.31923	0.03931
5	7.25794	5.76634	3.5607	2.15412	0.05164
6	10.20046	7.30805	5.08503	2.90342	0.06628
7	6.13145	4.27357	2.62737	1.48395	0.04183
8	7.61084	5.95021	3.67514	2.23996	0.05326
9	10.50474	7.45808	5.25553	3.00531	0.06939
10	6.06779	4.05627	2.48561	1.38719	0.04355
11	5.97778	3.97628	2.43643	1.35391	0.04257

APPENDIX 3.5-1

Additional Ambient Noise Measurements from July 2001

BLACK & VEATCH CONSTRUCTION, INC.
P.O. Box 8405, Kansas City, Missouri 64114, (913) 458-2000

Mirant Delta LLC
Contra Costa CC Project – Unit 8

BVCI Project 65108
BVCI File: 14.0100, 31.0407
BVCI/M-015

August 13, 2001

Mirant California LLC
3201 Wilbur Avenue
P.O. Box 1687
Antioch, CA 94509

Attn. Chuck Hicklin
Project Director

Subject: Facility Noise Assessment

Gentlemen:

On July 26 and 27, 2001, BVCI conducted an ambient noise survey, in accordance with CEC requirements. The results of that survey were given to Mr. David Frandsen for submittal to the CEC. Attached is the completed Facility Noise Assessment, which contains the ambient noise survey results, as well as our predictive facility model based on the equipment to be installed for Unit 8.

BVCI's predictive model is based on the equipment sound level specifications obtained from GE and Vogt-NeM for the CTs, STG, and HRSGs. Based on these specifications, the model indicates that Unit 8 will not meet the sound levels predicted by URS, and submitted to the CEC. It is important to note that the URS model was based on noise levels for the CT which are lower than what GE is actually providing. The URS survey is based on 58dBA at 400 ft. for the CT, while GE has confirmed 65 dBA at 400 ft. for the CTs. GE also confirmed 65 dBA at 400 feet for the STG. In addition, the URS information that we have does not mention the HRSGs, STG, or cooling tower.

In summary, in order to meet the levels submitted to the CEC in the AFC, additional mitigation measures will be required for the CTs, HRSGs, and STG. Our estimates of the required equipment noise emission levels are listed in the attached report. Balance of plant equipment will be specified by BVCI to meet the levels set forth in our report.

Please also note that the model does not include the fuel gas compressors at this time. Once the location and size of the compressors has been determined, these can be added to the predictive model. I suggest that once you have had the opportunity to review our model, that we discuss options on how to resolve the inconsistencies.

Please let us know if you have any questions regarding this report.

Very truly yours,

BLACK & VEATCH CONSTRUCTION INC.

Kermit E. Trout
Project Manager

Attachment(s)
cc: Doug Berger
Annette Williams
Dave Frandsen

bcc: KET/DCW/File
Andy Dicke

Facility Noise Assessment

Contra Costa Unit 8
Mirant Corporation
Contra Costa County, California

BVCI Project 065108
August 8, 2001

Executive Summary

In accordance with the CEC Condition of Certification Noise-6, BVCI has conducted a facility noise evaluation of the proposed Contra Costa Power Plant. Condition of Certification-6 requires an ambient noise survey prior to construction and a noise evaluation to ensure the facility noise emissions do not increase the existing ambient by more than 3 dBA.

An ambient survey was conducted on July 26 and July 27, 2001. The measured sound levels ranged in the low 60's dBA during the survey. The sound levels were consistently 2 to 3 dBA higher than the levels measured during the previous site noise surveys. The previous surveys are outlined in the Application for Certification. The sound levels, as measured during the July 2001, do not result in any change to the facility design requirements.

Predictive facility noise modeling was performed based on the current equipment noise specifications and standard equipment noise packages. Modeling results indicate the facility noise emissions, based on available project equipment noise guarantees and standard noise packaged equipment, will result in facility noise emissions which exceed the CEC allowable sound levels. Additional noise mitigation is required.

Noise modeling was conducted with upgraded mitigation packages to establish the required noise mitigation levels. The required equipment noise specification levels and associated mitigation are summarized in Table 3. Each equipment package must meet the levels identified in Table 3 in order for the overall facility to achieve the sound levels required by the CEC.

Condition of Certification

The ambient noise survey was conducted in accordance with the CEC Condition of Certification Noise-6 (Noise-6). The condition of certification requires an ambient survey be conducted prior to construction and an additional survey be conducted after commencement of facility operation. The sections of Noise-6 that are applicable to the preconstruction survey are copied below:

> **Noise-6.** Prior to initiating construction, the project owner shall conduct a 25-hour community noise survey at the closest noise sensitive receptor (applicant's

OML5 location), and shall conduct short-term noise measurements during daytime, evening and nighttime hours at locations OML6 and OML7.

The project design and implementation shall include appropriate noise mitigation measures adequate to ensure that the project will not cause resultant noise levels to exceed the ambient background noise level (L90) at residential receivers by more than 3 dBA.

Verification: Within 15 days after completing the survey, the project owner shall submit a summary report of the survey to the Contra Costa County Community Development Department, to the City of Antioch, and to the CPM. Included in the report will be a description of any additional mitigation measures necessary to achieve compliance with the above listed noise limits, and a schedule, subject to CPM approval, for implementing these measures.

Ambient Noise Survey

An ambient noise survey was conducted on July 26 and July 27, 2001. Continuous and short-term measurements were conducted at each location, OML5, OML 6 and OML7. The three measurement locations are identified in Figure 1. The continuous measurements results are contained in Appendix A, the short-term measurements results are contained in Appendix B.

The continuous noise measurements were conducted for a 25 hour period. The measurements included the equivalent-continuous sound level, L_{eq}; the 90-percentile exceedance sound level, L_{90}; the 50-percentile exceedance sound level, L_{50}; and the 10-percentile exceedance sound level, L_{10}, during each one-hour period. The continuous noise measurements were conducted using Larson Davis model LD700 integrating sound level meters that satisfy the ANSI S1.4 Type 2 standards.

Short-term A-weighted and 1/3 octave band noise measurements were conducted at each location in order to evaluate the spectral content of the existing acoustical environment. The short-term measurements also include L_{eq}, L_{90}, L_{50} and L_{10} sound parameters. The short-term noise measurements were conducted using a Rion model NA-27 integrating sound level meters that satisfy the ANSI S1.4 Type 1 standards.

Weather conditions during the measurement period were favorable for sound level measurements and generally included clear skies, with temperatures ranging from 60 to

75 °F. Winds were variable during the survey. The winds ranged from 5 to 10 mph during the daytime and were calm during nighttime periods.

The minimum hourly Leq sound level measured at each location is summarized in Table 1. Table 1 also includes the day-night sound level (L_{dn}) and the CNEL at each location.

The short-term measurements results correlate closely with the continuous measurements. The short-term measurements are detailed in appendix B. The sound level data includes 1/3 octave band measurement results to indicate the spectral character of the existing noise environment. The spectral sound levels do not indicate any significant tonal noise levels.

The existing acoustic environment is primarily attributed to the existing power station. The power station was operating at or near full load during the entire survey period. Other noise sources included occasional local traffic and intermittent wind noise. The measured sound level was relatively level throughout the survey period, which is indicative of the steady noise radiated by the existing power station.

Allowable Facility Noise Emissions

In accordance with Condition Noise-6, the proposed facility noise emissions must not cause an increase of the existing sound levels by more than 3 dBA. If the proposed facility noise emissions equal the existing sound level, the resulting level will be a 3 dBA increase. For example, a 60 dBA background level combined with a 60 dBA plant level would result in 63 dBA, for a 3 dBA increase. Therefore, noise emissions resulting from the proposed facility must not exceed the existing minimum Leq sound level. The allowable facility sound levels are contained in Table 1.

Table 1

Summary of Continuous (25-hour) Ambient Sound Level Measurement Results.

Location[1]	Hourly Exceedance Sound Levels, dBA				
	Minimum Leq during July 2001 Survey	Minimum Leq during January 2000 Survey	Allowable Facility Noise Emissions	Ldn	CNEL
OML5	63.5 dBA	61.3 dBA	61.3 dBA	72.7 dBA	73.0 dBA
OML6	62.0 dBA	N/A	62.0 dBA	72.3 dBA	72.5 dBA
OML7	62.5 dBA	N/A	62.5 dBA	70.6 dBA	71.0 dBA

Predicted Facility Sound Levels in Application for Certification

The facility environmental noise emissions were projected within the Application for Certification (AFC) report. The sound levels predicted in the AFC were based on two combustion turbine packages each specified to meet 58 dBA at 400 feet from the equipment. The AFC noise modeling does not appear to include the effects of other facility equipment such as the steam turbine generator, HRSGs, cooling tower, generator step-up transformers or boiler feed pumps.

In the AFC, the facility noise emissions were projected to be 59 dBA at OML5, located approximately 400 feet from the facility equipment. Location OML6 is approximately 800 feet from the nearest turbine equipment, and location OML7 is located approximately 950 feet from the nearest turbine equipment. Based on the AFC calculation procedure, the projected facility noise emissions, based on reduction of sound level with distance, is 53 dBA at OML6 and 51 dBA at OML7.

Environmental Noise Emissions

BVCI calculated the facility environmental noise emissions using a computer model that simulates the propagation of noise from all facility equipment. The results of this modeling are summarized below.

Noise Modeling Methodology

The environmental noise emissions were modeled using noise prediction software. The model simulated the outdoor propagation of sound from each point source and accounted for sound wave divergence, atmospheric sound absorption, sound directivity, and sound attenuation due to interceding barriers. A database was developed which specified the location, octave band sound power levels, and sound directivity of each noise source. A receptor grid was specified which covered the entire area of interest. The proposed facility and equipment layout was based on BCVI Drawing 065108-DS-1001 Rev 1 dated June 19, 2001. The model calculated the overall A-weighted sound pressure level at each receptor location based on the octave band sound level contribution of each noise source. Finally, a noise contour plot was produced based on the overall sound pressure level at each receptor location. The results are generally considered conservative due to the modeling methodology and the manufacturer's equipment sound level specifications. This conservatism is typically considered as design margin and the actual sound levels may be on the order of 2 dB lower than the predicted sound levels.

Noise modeling was conducted to predict the environmental noise emissions during normal facility operation, which excludes intermittent activities such as start-up, shut down, steam release, bypass operation, and any other abnormal or upset operating conditions.

Facility Noise Emissions

Based on the referenced drawing, the proposed facility includes a 2-on-1 combined cycle arrangement. The primary noise sources anticipated with this facility are the combustion turbine generator (CTG) packages, the heat recovery steam generator (HRSG) packages, the steam turbine generator (STG) package, and the 10-cell cooling tower. Secondary noise sources are anticipated to include the generator step-up transformers (GSUT), the boiler feed pumps (BFP), and the circulating water pumps (CWP). All equipment sound levels were based on vendor provided noise data where available or data provided by the Edison Electric Institute (EEI) in the *Electric Power Plant Environmental Noise Guide* (1984).

Standard Equipment

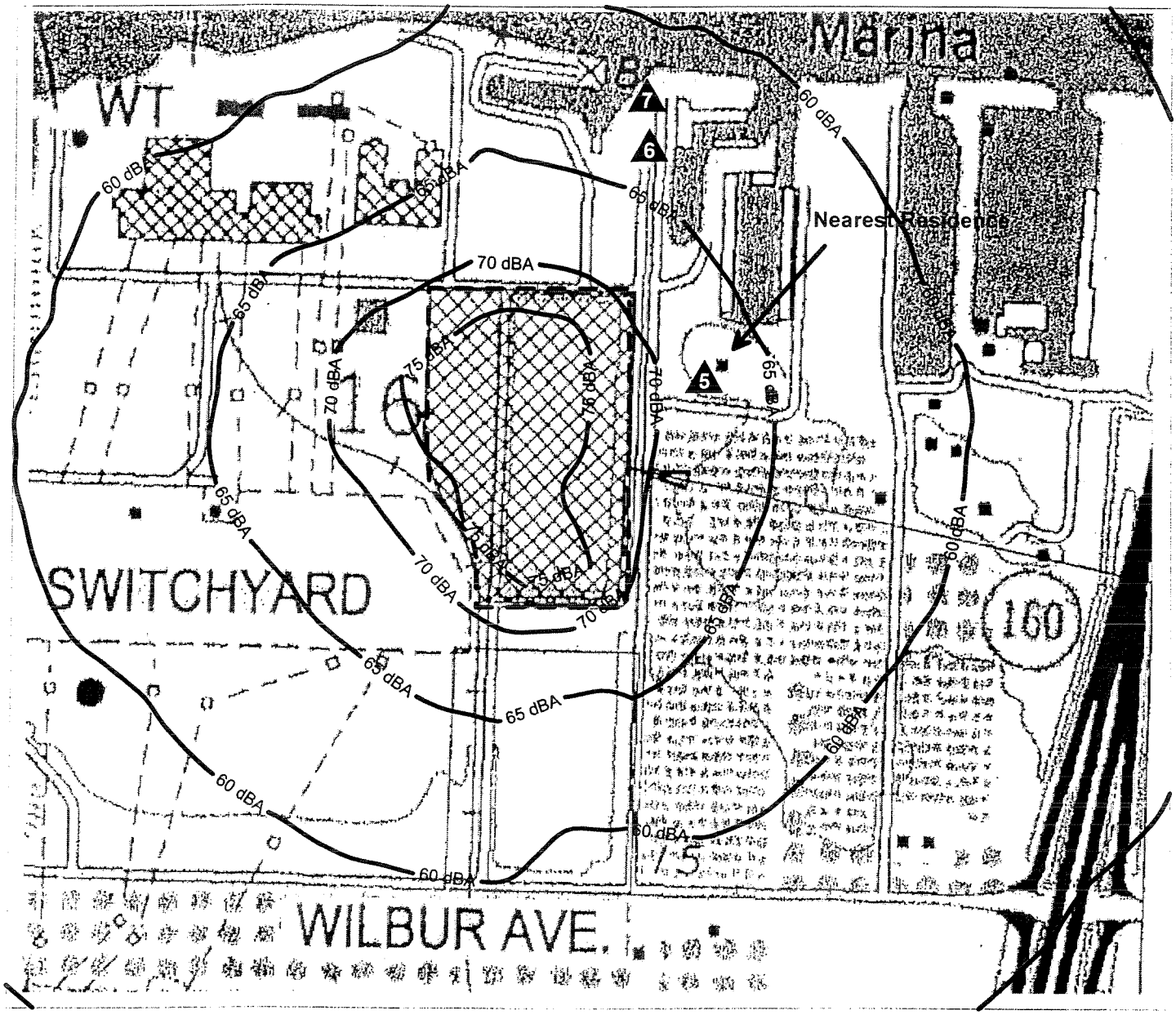
The facility noise emissions were initially modeled based on available equipment guarantees and standard packaged equipment. Available equipment guarantees include the following:

- Combustion Turbine Generator Package (CTG); 65 dBA at 400 feet
- HRSG; 64 dBA at 400 feet
- Steam Turbine Generator Package (STG); 95 dBA at 3 feet.

All remaining equipment is assumed to include standard noise packaged equipment. Standard packaged equipment includes noise mitigation measures that come standard on each equipment package for no added cost. The equipment sound level specification for each equipment noise source is listed in Table 2. These equipment sound level specifications are anticipated to be available with standard packaged equipment. However, the available performance guarantees for each equipment component must be confirmed with the appropriate equipment suppliers. The predicted facility noise emissions from the standard packaged equipment are detailed in Figure 1. The projected facility sound levels exceed the levels allowable by the CEC.

Table 2
Anticipated Equipment Sound Level Specifications for Standard Packaged Equipment

Equipment	Noise Source Components	Sound Level Specification
CTG Pkg	Turbine compartment, generator compartment, ventilation fans, exhaust ductwork and all other auxiliary equipment.	65 dBA @ 400 ft[1,3]
HRSG Pkg	Transition ductwork, boiler, stack, stack exit, and all other auxiliary equipment included in the scope-of-supply.	64 dBA @ 400 ft[1,3]
STG Pkg	Compartments, ventilation fans, piping, and all other auxiliary equipment included in the STG scope-of-supply.	65 dBA @ 400 ft[1]
BFP	Pump and motor assembly.	90 dBA @ 3 ft[2]
GSUT	Transformer with fans at max cooling.	85 dBA @ 3 ft[2]
CLG TWR (10-cell)	Fans, motors, gear boxes, water splash, and all associated equipment.	67 dBA @ 400 ft[1]



EQUIPMENT SOUND LEVEL SPECIFICATIONS

Std - CTG Pkg (GE 7FA) : 65 dBA @ 400 ft
(Per Equipment Specification)
Std - HRSG Pkg : 64 dBA @ 400 ft
(Per Equipment Specification)
Std - BFP : 90 dBA @ 3 ft
Std - GSUT : 85 dBA per IEEE C57.12.90
Std - STG Pkg : 65 dBA @ 400 ft
Std - CLGTWR : 67 dBA @ 400 ft
Std - CWP: 90 dBA @ 3 ft

Figure 1.

STANDARD PACKAGED EQUIPMENT

Predicted A-weighted sound pressure levels (re: 20e-6 Pa) during normal operation of the proposed facility. Sound pressure level results do not include the barrier effect of off-site buildings, structures, and intervening terrain.

CONTRA COSTA UNIT 8

MIRANT CORPORANTION

N

0 ft 250 ft 500 ft 750 ft

LEGEND

5 *Off-site Measurment Location (OML)*

Std : Standard Equipment Packaged
Upg : Upgraded Equipment Package

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Circulating Water Pumps	Pump and motor assembly.	90 dBA @ 3 ft [2]

NOTES

1. *The maximum sound pressure level in any direction from the equipment envelope at the distance specified. The equipment envelope is defined as the contour that completely encompasses all equipment components at a distance of 3 feet from the equipment face or enclosure.*
2. *Average sound pressure level along the equipment envelope*
3. *Based on available equipment guarantees.*

Upgraded Equipment

In order to reduce the facility noise emissions and comply with the CEC noise requirements, upgraded noise mitigation measures were considered for the major equipment noise sources. The equipment sound level specifications and anticipated mitigation measures for each equipment noise source are listed in Table 3. These equipment sound level specifications are anticipated to be available with upgraded equipment packages. However, the available equipment performance guarantees must be confirmed with the appropriate equipment suppliers. Additionally, suppliers must verify the impact of the noise mitigation measures on equipment performance and cost.

Table 3

Anticipated Equipment Sound Level Specifications for Standard Packaged Equipment

Equipment	Noise Source Components	Sound Level Specification	Expected Mitigation Measures
CTG Pkg	Turbine compartment, generator compartment, ventilation fans, exhaust ductwork and all other auxiliary equipment.	58 dBA at 400 ft[1]	Level 3 noise mitigation package
HRSG Pkg	Transition ductwork, boiler, stack, stack exit, and all other auxiliary equipment included in the scope-of-supply.	55 dBA @ 400 ft [1]	Upgraded stack silencer, based on vendor data no other mitigation is necessary.
STG Pkg	Compartments, ventilation fans, piping, and all other auxiliary equipment included in the STG scope-of-supply.	60 dBA @ 400 ft[1]	
BFP	Pump and motor assembly.	85 dBA @ 3 ft[2]	Low noise package or Enclosure

GSUT	Transformer with fans at max cooling.	85 dBA @ 3 ft[2]	Standard Equipment
CLG TWR (10-cell)	Fans, motors, gear boxes, water splash, and all associated equipment.	57 dBA @ 400 ft[1]	Low-speed or low-noise fans, low-noise motors and gear boxes, and splash attenuation mats.

NOTES

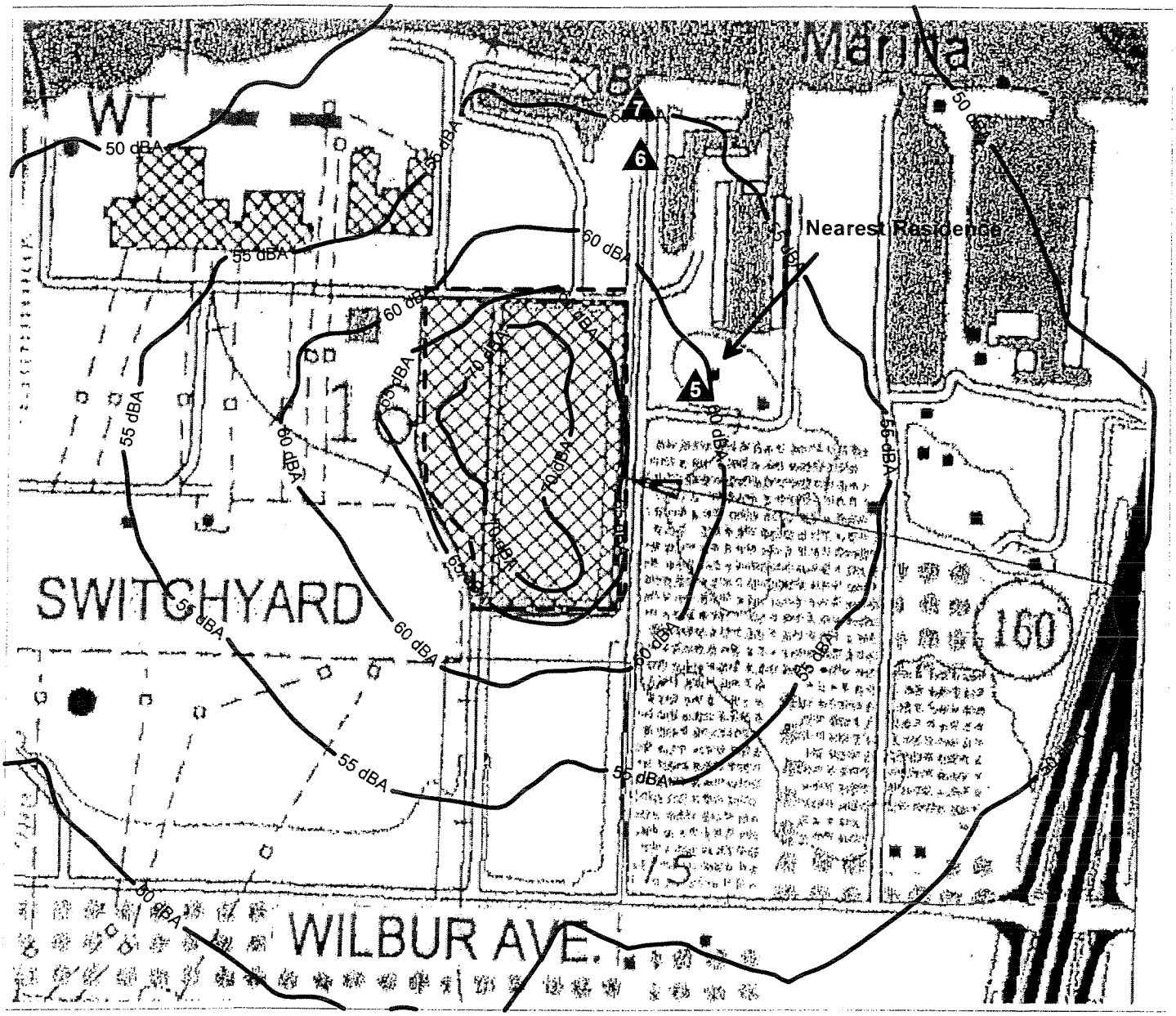
1. *The maximum sound pressure level in any direction from the equipment envelope at the distance specified. The equipment envelope is defined as the contour that completely encompasses all equipment components at a distance of 3 feet from the equipment face or enclosure.*
2. *Average sound pressure level along the equipment envelope.*

The predicted facility noise emissions from the upgraded equipment packages are detailed in Figure 2. The predicted facility sound levels are compared to the measured background sound levels in Table 4. As noted in Table 4, the facility noise emissions, with the mitigation packages identified in Table 3, will satisfy the CEC noise requirements. Each piece of equipment must meet the levels outlined in Table 3 in order for the overall facility to satisfy the CEC requirements.

Table 4

Comparison of CEC Allowable Facility Noise Emissions and Projected Facility Noise Emissions with Upgraded Silencing Equipment.

Nearby Residences Representative Measurement Location	**CEC Allowable Facility Noise Emission Levels, dBA**	**Predicted Facility Sound Level, dBA**
OML 5	61.3 dBA	60 dBA
OML 6	62.0 dBA	55 dBA
OML 7	62.5 dBA	57 dBA



EQUIPMENT SOUND LEVEL SPECIFICATIONS

Upg - CTG Pkg (GE 7FA) : 58 dBA @ 400 ft
Upg - HRSG Pkg : 55 dBA @ 400 ft
Upg - BFP : 85 dBA @ 3 ft
Std - GSUT : 85 dBA per IEEE C57.12.90
Upg - STG Pkg : 60 dBA @ 400 ft
Upg - CLGTWR : 57 dBA @ 400 ft
Upg - CWP: 85 dBA @ 3 ft

With Barrier walls on the west side of GSUTs

Figure 2.

UPGRADED PACKAGED EQUIPMENT

Predicted A-weighted sound pressure levels (re: 20e-6 Pa) during normal operation of the proposed facility. Sound pressure level results do not include the barrier effect of off-site buildings, structures, and intervening terrain.

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N

0 ft 250 ft 500 ft 750 ft

Std : Standard Equipment Packaged
Upg : Upgraded Equipment Package

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Appendix A

Continuous Noise Measurement Results

Table A-1
Continuous Noise Measurements
Off-site Measurement Location 5 (OML-5)

DATE	TIME	Leq (dBA)	L10 (dBA)	L50 (dBA)	L90 (dBA)
July 26, 2001	10:30 AM	65.5	67.0	65.0	63.0
July 26, 2001	11:30 AM	66.5	67.5	65.0	63.5
July 26, 2001	12:30 PM	67.5	68.5	67.0	65.5
July 26, 2001	1:30 PM	67.0	68.0	66.5	65.5
July 26, 2001	2:30 PM	66.0	67.5	65.5	63.5
July 26, 2001	3:30 PM	66.0	67.5	65.5	64.0
July 26, 2001	4:30 PM	66.0	67.5	65.5	64.0
July 26, 2001	5:30 PM	67.0	69.0	66.0	64.5
July 26, 2001	6:30 PM	68.0	69.5	66.5	64.5
July 26, 2001	7:30 PM	69.0	71.0	67.5	65.5
July 26, 2001	8:30 PM	67.5	69.5	67.0	65.0
July 26, 2001	9:30 PM	67.0	68.5	67.0	65.0
July 26, 2001	10:30 PM	67.5	69.0	67.5	65.5
July 26, 2001	11:30 PM	66.5	68.5	66.5	64.0
July 27, 2001	12:30 AM	65.0	67.0	65.0	63.5
July 27, 2001	1:30 AM	65.5	67.0	65.5	64.0
July 27, 2001	2:30 AM	65.5	67.0	65.0	63.5
July 27, 2001	3:30 AM	65.0	66.5	64.5	63.0
July 27, 2001	4:30 AM	67.5	69.0	67.0	65.5
July 27, 2001	5:30 AM	68.0	69.0	67.0	65.5
July 27, 2001	6:30 AM	67.0	68.5	66.5	65.0
July 27, 2001	7:30 AM	67.5	69.0	67.5	65.5
July 27, 2001	8:30 AM	66.5	68.5	66.0	64.0
July 27, 2001	9:30 AM	64.5	66.0	64.5	63.0
July 27, 2001	10:30 AM	63.5	65.0	63.5	62.0
July 27, 2001	11:30 AM	72.5	66.5	63.0	61.5
	Minimum	63.5	65.0	63.0	61.5
	Median	66.8	68.3	66.0	64.0
	Maximum	72.5	71.0	67.5	65.5

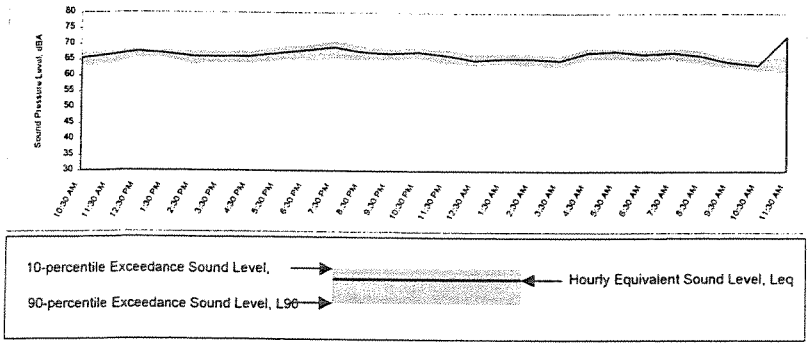


Table A-2
Continuous Noise Measurements
Off-site Measurement Location 6 (OML-6)

DATE	TIME	Leq (dBA)	L10 (dBA)	L50 (dBA)	L90 (dBA)
July 26, 2001	10:30 AM	64.0	65.5	63.5	62.0
July 26, 2001	11:30 AM	63.5	65.0	63.0	61.5
July 26, 2001	12:30 PM	64.5	66.0	64.5	63.0
July 26, 2001	1:30 PM	66.0	67.0	65.5	64.5
July 26, 2001	2:30 PM	64.5	66.0	63.5	61.5
July 26, 2001	3:30 PM	64.5	66.0	64.0	62.5
July 26, 2001	4:30 PM	64.0	65.5	63.0	61.5
July 26, 2001	5:30 PM	64.5	66.0	64.0	62.5
July 26, 2001	6:30 PM	65.0	66.5	64.5	63.0
July 26, 2001	7:30 PM	66.0	67.5	65.5	64.0
July 26, 2001	8:30 PM	65.5	67.0	65.0	63.5
July 26, 2001	9:30 PM	65.5	67.0	65.5	64.0
July 26, 2001	10:30 PM	66.5	68.5	66.0	64.5
July 26, 2001	11:30 PM	66.0	68.0	66.0	63.5
July 27, 2001	12:30 AM	64.5	66.0	64.5	62.5
July 27, 2001	1:30 AM	65.0	66.5	65.0	63.5
July 27, 2001	2:30 AM	65.0	66.5	65.0	63.5
July 27, 2001	3:30 AM	65.0	66.0	64.5	63.0
July 27, 2001	4:30 AM	67.5	69.0	67.5	66.0
July 27, 2001	5:30 AM	68.0	69.5	67.5	66.0
July 27, 2001	6:30 AM	68.0	69.5	67.5	66.0
July 27, 2001	7:30 AM	67.5	69.0	67.5	65.5
July 27, 2001	8:30 AM	66.0	68.0	65.5	63.5
July 27, 2001	9:30 AM	63.5	65.0	63.0	61.5
July 27, 2001	10:30 AM	62.0	63.5	62.0	60.5
July 27, 2001	11:30 AM	62.0	63.0	61.5	60.5
	Minimum	62.0	63.0	61.5	60.5
	Median	65.0	66.5	64.8	63.3
	Maximum	68.0	69.5	67.5	66.0

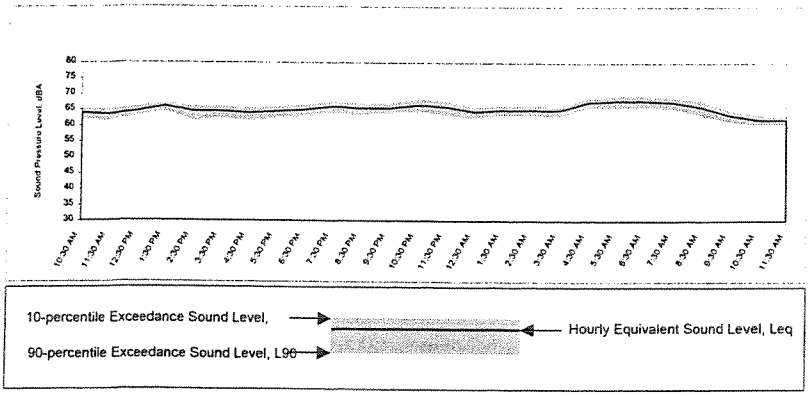
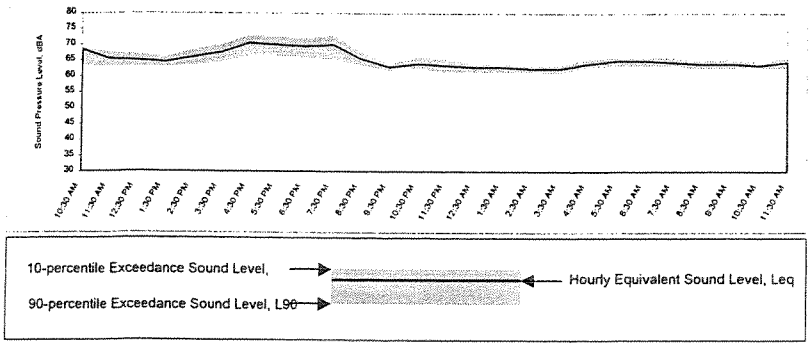


Table A-3
Continuous Noise Measurements
Off-site Measurement Location 7 (OML-7)

DATE	TIME	Leq (dBA)	L10 (dBA)	L50 (dBA)	L90 (dBA)
July 26, 2001	10:30 AM	68.5	69.0	64.0	63.5
July 26, 2001	11:30 AM	65.5	67.5	65.0	63.0
July 26, 2001	12:30 PM	65.0	67.0	64.5	63.0
July 26, 2001	1:30 PM	64.5	66.0	64.0	63.0
July 26, 2001	2:30 PM	66.0	68.5	65.5	63.5
July 26, 2001	3:30 PM	67.5	70.0	67.0	64.5
July 26, 2001	4:30 PM	70.5	73.0	69.5	66.5
July 26, 2001	5:30 PM	70.0	72.5	69.5	66.5
July 26, 2001	6:30 PM	69.5	72.0	68.5	66.0
July 26, 2001	7:30 PM	70.0	73.0	69.0	65.5
July 26, 2001	8:30 PM	65.5	67.5	65.0	63.5
July 26, 2001	9:30 PM	63.0	64.0	63.0	62.0
July 26, 2001	10:30 PM	64.0	66.0	63.5	62.5
July 26, 2001	11:30 PM	63.5	65.5	63.5	61.5
July 27, 2001	12:30 AM	63.0	64.0	62.5	61.5
July 27, 2001	1:30 AM	63.0	64.0	62.5	61.5
July 27, 2001	2:30 AM	62.5	63.5	62.5	61.5
July 27, 2001	3:30 AM	62.5	63.5	62.0	61.0
July 27, 2001	4:30 AM	64.0	65.5	64.0	63.0
July 27, 2001	5:30 AM	65.0	66.0	64.5	63.5
July 27, 2001	6:30 AM	65.0	66.0	64.5	63.5
July 27, 2001	7:30 AM	64.5	66.0	64.5	63.5
July 27, 2001	8:30 AM	64.0	65.0	64.0	62.5
July 27, 2001	9:30 AM	64.0	65.5	64.0	62.5
July 27, 2001	10:30 AM	63.5	64.5	63.5	62.5
July 27, 2001	11:30 AM	64.5	66.0	64.0	62.5
	Minimum	62.5	63.5	62.0	61.0
	Median	64.5	66.0	64.0	63.0
	Maximum	70.5	73.0	69.5	66.5



Appendix B

Intermittent Measurement Results

Table B-1

Intermittent Measurement Results

Address in Meter	Date	Start Time		Overall			Octave Band Center Frequency (Hz)									
				dB	dBA	dBC*	16	31	63	125	250	500	1,000	2,000	4,000	8,000
OML-5	07/25/2001	19:07:12	Leq	83.5	65.7	82.5	71.8	79.0	79.4	74.8	65.0	62.6	60.0	56.0	50.0	36.6
			L1	87.7	70.8	87.7	75.3	84.3	84.4	79.3	69.9	68.4	66.0	62.0	55.3	46.8
			L10	85.0	67.3	85.0	74.8	81.7	81.7	76.3	66.8	64.3	61.9	57.9	51.9	37.1
			L50	83.1	64.8	81.6	70.8	78.3	78.5	73.6	63.9	60.8	58.7	55.2	49.4	31.7
			L90	81.3	62.5	78.3	66.5	74.6	75.4	71.0	61.0	57.6	55.8	52.6	46.9	28.8
OML-5	07/26/2001	3:04:28	Leq	83.5	65.8	81.2	73.4	77.3	78.2	75.6	67.5	60.9	59.6	56.2	50.0	39.1
			L1	88.4	70.6	86.7	81.2	82.5	83.5	81.0	73.0	67.8	65.5	61.1	54.9	43.3
			L10	85.4	67.7	83.9	76.5	80.0	80.8	78.3	70.7	63.5	61.9	58.4	52.0	36.4
			L50	83.1	65.5	80.5	71.6	76.6	77.6	75.2	67.1	60.0	58.9	55.7	49.4	32.5
			L90	80.6	62.5	76.7	66.9	72.8	73.9	70.1	58.3	57.0	55.7	52.2	45.6	28.0
OML-5	07/26/2001	11:49:42	Leq	81.7	64.9	80.0	71.9	76.5	76.7	72.5	64.4	61.9	59.8	56.0	49.3	32.8
			L1	86.0	68.3	85.0	78.9	81.8	81.1	76.6	69.3	66.4	64.3	60.0	54.2	43.8
			L10	83.3	66.6	82.6	74.9	79.2	79.0	74.6	66.8	64.0	61.9	57.9	51.2	33.0
			L50	81.5	64.6	79.4	70.7	75.8	76.3	72.1	63.9	61.4	59.4	55.6	48.8	29.3
			L90	79.9	63.2	76.1	66.2	72.2	73.3	69.6	61.2	59.4	57.4	53.8	46.9	26.8
OML-5	07/26/2001	19:05:20	Leq	85.6	67.3	83.1	75.7	79.3	80.0	74.3	63.3	64.3	62.9	58.5	51.9	33.7
			L1	93.2	71.4	88.8	85.0	84.8	85.1	78.8	68.7	69.7	67.6	62.4	55.7	38.8
			L10	87.7	69.3	85.9	78.9	82.2	82.6	76.7	65.7	66.8	65.2	60.6	54.0	36.0
			L50	84.5	67.0	82.3	72.9	78.5	79.3	73.9	62.5	63.6	62.4	58.2	51.6	33.1
			L90	82.2	64.8	78.8	68.0	74.7	76.1	71.0	59.6	60.7	60.0	56.1	49.4	30.9
OML-5	07/27/2001	1:03:44	Leq	80.3	65.8	77.6	69.6	73.5	74.6	73.6	66.2	61.6	60.0	58.6	51.0	31.7
			L1	86.7	69.9	82.8	78.2	78.7	79.2	77.6	70.6	66.1	65.5	63.7	56.1	37.7
			L10	81.4	67.7	80.1	72.1	76.1	77.0	75.7	68.6	63.8	62.2	60.9	53.1	33.9
			L50	79.7	65.4	77.0	67.4	72.8	74.1	73.4	65.8	61.1	59.4	58.0	50.4	31.0
			L90	78.0	63.4	73.8	62.7	69.4	71.2	70.8	62.1	58.6	57.0	55.7	48.0	29.1
OML-5	07/27/2001	11:29:54	Leq	81.1	63.9	79.7	71.4	75.4	77.1	72.6	64.8	60.6	58.1	54.4	47.7	31.6
			L1	84.3	67.4	84.5	77.5	80.4	81.5	76.7	69.8	64.7	62.6	58.7	52.7	39.9
			L10	82.6	65.4	82.2	74.5	78.0	79.3	74.7	67.3	62.4	59.8	56.1	49.4	30.6
			L50	81.0	63.6	79.2	70.3	74.7	76.7	72.2	64.3	60.3	57.6	53.9	46.9	26.8
			L90	79.6	62.3	76.0	65.9	71.3	73.8	69.9	61.4	58.4	55.7	52.1	45.1	24.9
OML-6	07/26/2001	11:17:18	Leq	86.2	67.8	80.6	77.5	77.1	75.5	73.0	71.0	66.9	63.4	59.1	51.7	38.0
			L1	88.6	71.1	86.0	83.9	82.4	80.2	77.7	76.3	73.1	69.7	64.6	56.8	44.8
			L10	87.8	69.3	83.4	80.8	79.9	77.9	75.3	73.6	69.6	66.3	61.6	53.9	41.2
			L50	86.2	67.5	79.8	76.3	76.4	75.0	72.5	70.4	65.9	62.2	58.4	51.1	36.1
			L90	84.1	66.3	76.2	71.3	72.6	72.0	69.9	67.3	62.8	59.4	56.1	49.1	33.3
OML-6	07/26/2001	18:28:14	Leq	90.5	67.3	84.9	83.5	81.4	78.4	75.7	69.4	63.8	62.3	58.6	51.6	40.7
			L1	97.8	70.1	91.9	91.5	88.3	84.4	81.3	77.7	73.8	69.0	62.7	55.9	51.5
			L10	93.9	68.6	87.9	87.0	84.4	80.7	77.8	71.4	65.0	63.8	60.1	53.0	41.1
			L50	88.7	67.1	83.6	81.3	80.2	77.6	75.1	68.3	62.2	61.5	58.3	51.1	36.5
			L90	85.4	65.7	79.7	75.8	76.3	74.7	72.4	65.3	60.0	59.7	56.6	49.3	34.2
OML-6	07/27/2001	0:42:06	Leq	84.9	68.5	78.5	76.5	73.7	73.7	75.9	70.4	61.6	63.0	61.9	54.4	38.1
			L1	93.2	72.0	85.1	85.3	80.5	78.1	79.7	74.1	65.7	68.3	66.4	57.9	41.9
			L10	87.5	70.1	81.2	79.9	76.4	76.0	77.8	72.5	63.6	65.5	64.0	56.1	39.5
			L50	83.0	68.3	77.3	73.9	72.5	73.3	75.6	70.0	61.2	62.3	61.5	54.2	37.8
			L90	80.8	66.8	73.9	68.4	68.9	70.6	73.3	67.6	59.0	59.7	59.6	52.5	36.4
OML-6	07/27/2001	11:56:52	Leq	85.6	69.1	80.4	76.4	76.9	75.8	75.3	73.5	66.5	63.6	59.6	52.7	38.3
			L1	88.1	71.9	85.6	82.8	82.1	80.3	79.3	78.0	72.1	69.0	64.4	57.2	45.1
			L10	87.2	70.6	83.0	79.6	79.6	78.1	77.3	75.8	69.1	66.1	61.6	54.6	41.2
			L50	85.5	69.0	79.8	75.2	76.3	75.3	75.0	73.1	65.6	62.9	59.0	52.3	36.0
			L90	83.7	67.6	76.3	70.5	72.6	72.4	72.5	70.3	62.9	60.5	57.2	50.6	33.9
OML-7	07/26/2001	11:00:47	Leq	84.7	65.6	80.5	77.1	77.1	75.8	68.9	64.2	62.1	60.7	58.6	53.3	44.2
			L1	88.4	73.6	86.1	84.2	82.6	80.3	75.7	73.1	71.1	68.9	67.6	63.2	55.6
			L10	87.1	65.2	83.2	80.5	80.0	78.0	71.3	67.3	64.8	62.4	58.6	51.7	40.6
			L50	84.3	63.6	79.7	75.3	76.4	75.4	67.8	61.7	59.6	58.9	56.1	49.5	37.2
			L90	81.6	62.2	76.2	70.1	72.6	72.7	65.4	59.0	57.3	56.8	54.0	47.6	35.3
OML-7	07/26/2001	18:44:17	Leq	90.8	66.0	85.0	84.0	81.4	78.3	71.2	63.7	62.9	61.8	58.4	51.6	44.2
			L1	97.6	68.3	92.1	91.8	88.4	84.3	78.7	74.6	71.3	67.1	61.6	55.1	48.8
			L10	94.4	67.1	88.2	87.7	84.5	80.6	72.9	64.3	63.9	63.1	59.6	53.2	46.7
			L50	89.1	65.8	83.6	81.9	79.9	77.6	70.3	61.7	62.0	61.4	58.2	51.3	43.6
			L90	85.3	64.9	79.3	76.1	75.5	74.7	67.9	59.5	60.3	60.0	56.9	49.9	41.3
OML-7	07/27/2001	0:24:53	Leq	82.6	63.4	77.1	75.3	72.8	72.2	69.9	58.2	57.7	58.8	57.1	49.4	35.1
			L1	89.8	66.1	83.6	83.8	79.3	76.4	73.7	61.8	60.8	62.5	60.6	53.0	38.1
			L10	85.4	64.6	79.9	78.8	75.7	74.4	71.9	60.1	59.3	60.4	58.7	50.9	36.6
			L50	81.1	63.3	76.0	73.0	71.8	71.8	69.7	58.0	57.5	58.6	56.9	49.2	34.9
			L90	78.2	62.0	72.4	67.4	67.9	69.2	67.3	56.0	55.9	57.0	55.3	47.7	33.4
OML-7	07/27/2001	12:14:15	Leq	84.5	63.4	79.8	77.2	76.9	73.7	68.8	64.2	60.6	59.1	56.3	48.4	37.7
			L1	88.1	65.8	85.3	83.8	82.2	78.4	74.4	71.3	68.1	65.5	60.8	53.3	48.1
			L10	86.8	64.6	82.6	80.5	79.7	75.9	70.9	66.8	62.9	60.8	57.8	49.5	37.3
			L50	84.1	63.4	79.0	75.8	76.2	73.1	68.2	63.0	59.2	58.3	55.9	47.9	33.8
			L90	81.2	62.3	75.4	70.6	72.5	70.4	65.8	60.1	57.0	56.6	54.4	46.5	32.1

* C-weighted values are calculated from measured octive band data

Meter Conversion

Description of the Site:

Address in Meter:	OML-5					OML-5					OML-5	
Date:	07/25/2001					07/26/2001					07/26/2001	
Start Time:	19:07:12					3:04:28					11:49:42	
Duration:	900					900					900	
Time Constant:	Fast					Fast					Fast	
Weighting:	Flat					Flat					Flat	
Sub Time Constant:	Fast					Fast					Fast	
Sub Weighting:	A					A					A	
	Leq	**L1**	**L10**	**L50**	**L90**	**Leq**	**L1**	**L10**	**L50**	**L90**	**Leq**	**L1**
Main	83.5	87.7	85	83.1	81.3	83.5	88.4	85.4	83.1	80.6	81.7	86
Sub	65.7	70.8	67.3	64.8	62.5	65.8	70.6	67.7	65.5	62.5	64.9	68.3
Calculated Octaves												
16 Hz	71.8	78.3	74.8	70.8	66.5	73.4	81.2	76.5	71.6	66.9	71.9	78.9
31 Hz	79.0	84.3	81.7	78.3	74.6	77.3	82.5	80.0	76.6	72.8	76.5	81.8
63 Hz	79.4	84.4	81.7	78.5	75.4	78.2	83.5	80.8	77.6	73.9	76.7	81.1
125 Hz	74.8	79.3	76.3	73.6	71.0	75.6	81.0	78.3	75.2	70.1	72.5	76.6
250 Hz	65.0	69.9	66.8	63.9	61.0	67.5	73.0	70.7	67.1	58.3	64.4	69.3
500 Hz	62.6	68.4	64.3	60.8	57.6	60.9	67.8	63.5	60.0	57.0	61.9	66.4
1 kHz	60.0	66.0	61.9	58.7	55.8	59.6	65.5	61.9	58.9	55.7	59.8	64.3
2 kHz	56.0	62.0	57.9	55.2	52.6	56.2	61.1	58.4	55.7	52.2	56.0	60.0
4 kHz	50.0	55.3	51.9	49.4	46.9	50.0	54.9	52.0	49.4	45.6	49.3	54.2
8 kHz	36.6	46.8	37.1	31.7	28.8	39.1	43.3	36.4	32.5	28.0	32.8	43.8
Frequency												
12.5 Hz	62.6	71.7	65.4	60.4	55.2	67.1	76.7	70.4	63.8	57.8	65.0	74.1
16 Hz	65.8	72.4	68.7	64.6	60.2	67.9	76.1	71.0	66.0	61.1	66.2	73.1
20 Hz	69.8	75.5	72.8	69.0	64.9	70.2	76.6	73.2	69.1	64.8	69.2	75.0
25 Hz	72.5	78.1	75.4	71.7	67.5	71.9	77.4	74.7	71.0	66.9	70.8	76.3
31.5 Hz	71.9	77.1	74.6	71.2	67.8	72.6	77.9	75.3	71.9	68.2	72.0	77.3
40 Hz	76.6	81.9	79.3	75.9	72.4	73.0	78.0	75.6	72.4	68.9	72.2	77.3
50 Hz	76.0	81.4	78.7	75.2	71.9	72.5	77.6	75.1	71.9	68.5	71.5	76.0
63 Hz	74.2	79.3	76.5	73.7	70.8	75.2	80.3	77.8	74.6	70.8	73.8	78.2
80 Hz	73.1	77.4	74.5	71.5	68.6	72.0	77.6	74.6	71.4	67.4	69.1	73.5
100 Hz	70.5	74.6	71.5	68.8	66.1	70.2	75.5	72.7	69.7	65.1	67.8	72.0
125 Hz	70.8	75.4	72.3	69.7	67.3	72.3	77.6	75.0	71.9	66.7	69.3	73.4
160 Hz	68.4	73.3	70.6	67.8	65.1	69.6	75.2	72.3	69.2	63.7	65.0	69.2
200 Hz	63.9	68.7	66.0	63.0	60.1	66.5	72.2	69.8	66.0	57.3	62.1	67.1
250 Hz	56.1	61.4	57.0	54.5	52.0	58.5	63.1	61.5	58.5	48.1	56.8	61.6
315 Hz	54.3	59.6	55.1	52.1	49.5	56.3	61.2	59.3	56.2	48.9	58.3	62.9
400 Hz	57.4	62.6	57.6	54.1	50.9	56.0	63.1	58.4	55.1	51.6	58.6	63.0
500 Hz	57.8	64.2	60.0	56.2	52.9	56.1	63.9	58.8	54.6	51.7	55.9	60.4
630 Hz	58.3	63.9	60.5	57.2	54.0	56.4	61.7	58.9	55.9	53.1	56.5	61.0
800 Hz	56.2	61.9	57.8	54.5	51.7	56.0	63.1	58.4	55.0	52.0	56.1	60.8
1 kHz	54.6	60.9	56.8	53.5	50.4	54.3	59.0	56.6	53.8	50.5	54.9	59.5
1.25 kHz	54.6	60.7	56.8	53.8	51.0	53.8	58.6	56.1	53.3	50.0	53.9	57.9
1.6 kHz	52.4	58.8	54.4	51.5	48.8	52.6	57.5	54.8	52.1	48.7	52.5	56.6
2 kHz	51.3	57.0	53.2	50.5	47.9	51.2	56.1	53.3	50.8	47.3	50.8	54.7
2.5 kHz	49.6	55.3	51.4	49.0	46.5	50.0	55.0	52.3	49.6	46.0	49.8	53.9
3.15 kHz	48.4	53.1	50.3	47.9	45.4	48.3	53.4	50.5	47.8	44.1	47.8	51.9
4 kHz	44.0	49.6	45.8	43.3	40.7	43.9	48.6	45.8	43.4	39.3	43.2	49.1
5 kHz	38.3	46.0	39.4	36.6	34.3	38.8	43.0	39.6	37.3	32.9	36.3	43.9
6.3 kHz	33.8	44.1	34.3	29.6	27.1	35.5	40.2	34.2	31.1	26.3	30.9	41.3
8 kHz	31.5	42.0	31.9	25.4	21.6	35.3	38.9	30.6	25.3	20.3	26.3	38.4
10 kHz	28.5	38.3	29.3	23.6	20.1	30.5	35.3	27.5	21.6	20.1	23.7	35.7
12.5 kHz	25.9	35.0	26.9	20.6	20.1	30.0	31.8	24.5	20.1	20.1	21.7	33.1

Meter Conversion

Description of the Site:

Address in Meter:				OML-5					OML-5					
Date:				07/26/2001					07/27/2001					
Start Time:				19:05:20					1:03:44					
Duration:				900					420.7					
Time Constant:				Fast					Fast					
Weighting:				Flat					Flat					
Sub Time Constant:				Fast					Fast					
Sub Weighting:				A					A					
	L10	**L50**	**L90**	**Leq**	**L1**	**L10**	**L50**	**L90**	**Leq**	**L1**	**L10**	**L50**	**L90**	
Main	83.3	81.5	79.9	85.6	93.2	87.7	84.5	82.2	80.3	86.7	81.4	79.7	78	
Sub	66.6	64.6	63.2	67.3	71.4	69.3	67	64.8	65.8	69.9	67.7	65.4	63.4	
Calculated Octaves														
16 Hz	74.9	70.7	66.2	75.7	85.0	78.9	72.9	68.0	69.6	78.2	72.1	67.4	62.7	
31 Hz	79.2	75.8	72.2	79.3	84.8	82.2	78.5	74.7	73.5	78.7	76.1	72.8	69.4	
63 Hz	79.0	76.3	73.3	80.0	85.1	82.6	79.3	76.1	74.6	79.2	77.0	74.1	71.2	
125 Hz	74.6	72.1	69.6	74.3	78.8	76.7	73.9	71.0	73.6	77.6	75.7	73.4	70.8	
250 Hz	66.8	63.9	61.2	63.3	68.7	65.7	62.5	59.6	66.2	70.6	68.6	65.8	62.1	
500 Hz	64.0	61.4	59.4	64.3	69.7	66.8	63.6	60.7	61.6	66.1	63.8	61.1	58.6	
1 kHz	61.9	59.4	57.4	62.9	67.6	65.2	62.4	60.0	60.0	65.5	62.2	59.4	57.0	
2 kHz	57.9	55.6	53.8	58.5	62.4	60.6	58.2	56.1	58.6	63.7	60.9	58.0	55.7	
4 kHz	51.2	48.8	46.9	51.9	55.7	54.0	51.6	49.4	51.0	56.1	53.1	50.4	48.0	
8 kHz	33.0	29.3	26.8	33.7	38.8	36.0	33.1	30.9	31.7	37.7	33.9	31.0	29.1	
Frequency														
12.5 Hz	68.0	62.7	57.6	70.5	81.2	74.0	65.5	59.1	63.8	74.6	65.6	60.2	55.0	
16 Hz	69.2	64.8	60.3	70.1	80.1	73.1	66.8	61.8	65.4	73.3	67.9	63.3	58.3	
20 Hz	72.2	68.3	64.0	71.9	79.2	75.0	70.5	66.0	65.1	71.9	68.0	63.7	59.3	
25 Hz	73.6	70.0	66.2	73.7	79.7	76.7	72.7	68.5	65.2	71.0	67.8	64.3	60.7	
31.5 Hz	74.8	71.3	67.6	74.5	79.9	77.4	73.7	69.9	70.0	75.2	72.6	69.3	65.8	
40 Hz	74.9	71.7	68.3	75.3	80.5	78.0	74.6	71.1	69.5	74.5	72.1	69.0	65.7	
50 Hz	73.9	71.1	68.1	75.6	80.9	78.3	74.8	71.4	70.0	74.7	72.5	69.5	66.5	
63 Hz	76.1	73.4	70.4	76.5	81.3	78.9	75.9	72.8	71.2	75.9	73.6	70.8	67.9	
80 Hz	71.4	68.7	66.0	73.0	78.0	75.6	72.3	69.2	67.3	71.5	69.5	66.9	64.2	
100 Hz	69.9	67.5	64.9	70.8	75.2	73.1	70.3	67.5	68.7	72.9	70.8	68.4	65.8	
125 Hz	71.4	68.9	66.5	70.5	75.0	72.8	70.1	67.2	70.2	74.0	72.3	70.0	67.4	
160 Hz	67.1	64.6	62.2	66.0	70.7	68.4	65.4	62.3	67.2	71.0	69.3	67.0	64.5	
200 Hz	64.7	61.6	58.4	60.1	65.9	62.8	59.2	55.9	65.2	69.7	67.7	64.8	60.8	
250 Hz	58.7	56.2	54.2	55.7	60.3	57.9	55.2	52.7	56.0	59.7	58.0	55.8	53.3	
315 Hz	60.3	57.8	55.7	58.6	63.8	60.9	57.9	55.2	56.3	60.9	58.5	55.9	52.9	
400 Hz	60.7	58.1	56.0	60.0	65.3	62.5	59.3	56.2	57.9	62.1	60.1	57.6	54.9	
500 Hz	58.0	55.4	53.4	59.4	65.2	61.9	58.6	55.3	56.7	60.9	59.0	56.2	53.8	
630 Hz	58.4	56.0	54.1	59.3	64.3	61.6	58.7	56.1	55.4	60.8	57.8	54.9	52.3	
800 Hz	58.2	55.6	53.5	59.2	64.1	61.5	58.6	56.1	54.8	60.9	56.9	54.2	51.7	
1 kHz	57.0	54.4	52.3	58.0	62.8	60.3	57.6	55.0	55.1	60.6	57.3	54.5	52.2	
1.25 kHz	55.8	53.6	51.8	56.9	61.2	59.0	56.6	54.3	55.7	60.8	58.0	55.2	52.8	
1.6 kHz	54.4	52.2	50.4	55.4	59.3	57.4	55.0	52.9	55.4	60.4	57.7	54.8	52.4	
2 kHz	52.6	50.4	48.7	53.3	57.1	55.3	53.0	50.9	53.5	58.6	55.7	52.9	50.6	
2.5 kHz	51.9	49.3	47.5	51.9	55.7	54.0	51.6	49.4	52.0	57.0	54.2	51.5	49.1	
3.15 kHz	49.8	47.4	45.5	50.6	54.5	52.8	50.3	48.1	49.3	54.4	51.4	48.8	46.3	
4 kHz	45.0	42.5	40.6	45.2	48.9	47.3	44.9	42.9	45.2	50.3	47.3	44.5	42.1	
5 kHz	37.8	35.3	33.4	38.0	41.3	39.8	37.8	35.9	38.7	44.4	40.9	38.0	35.6	
6.3 kHz	31.2	28.2	26.0	31.7	36.1	33.7	31.4	29.3	31.1	36.9	33.2	30.2	27.9	
8 kHz	26.2	21.4	18.0	27.6	33.5	30.4	26.7	24.2	22.0	28.4	23.8	20.6	20.1	
10 kHz	23.9	17.0	13.2	24.3	30.9	27.2	23.0	20.1	16.0	24.4	20.1	20.1	20.1	
12.5 kHz	21.2	14.1	11.2	20.9	28.4	23.8	20.1	20.1	14.1	22.3	20.1	20.1	20.1	

Meter Conversion

Description of the Site:

Address in Meter:	OML-5					OML-6				
Date:	07/27/2001					07/26/2001				
Start Time:	11:29:54					11:17:18				
Duration:	900					900				
Time Constant:	Fast					Fast				
Weighting:	Flat					Flat				
Sub Time Constant:	Fast					Fast				
Sub Weighting:	A					A				
	Leq	**L1**	**L10**	**L50**	**L90**	**Leq**	**L1**	**L10**	**L50**	**L90**
Main	81.1	84.3	82.6	81	79.6	86.2	88.6	87.8	86.2	84.1
Sub	63.9	67.4	65.4	63.6	62.3	67.8	71.1	69.3	67.5	66.3
Calculated Octaves										
16 Hz	71.4	77.5	74.5	70.3	65.9	77.5	83.9	80.8	76.3	71.3
31 Hz	75.4	80.4	78.0	74.7	71.3	77.1	82.4	79.9	76.4	72.6
63 Hz	77.1	81.5	79.3	76.7	73.8	75.5	80.2	77.9	75.0	72.0
125 Hz	72.6	76.7	74.7	72.2	69.9	73.0	77.7	75.3	72.5	69.9
250 Hz	64.8	69.8	67.3	64.3	61.4	71.0	76.3	73.6	70.4	67.3
500 Hz	60.6	64.7	62.4	60.3	58.4	66.9	73.1	69.6	65.9	62.8
1 kHz	58.1	62.6	59.8	57.6	55.7	63.4	69.7	66.3	62.2	59.4
2 kHz	54.4	58.7	56.1	53.9	52.1	59.1	64.6	61.6	58.4	56.1
4 kHz	47.7	52.7	49.4	46.9	45.1	51.7	56.8	53.9	51.1	49.1
8 kHz	31.6	39.9	30.6	26.8	24.9	38.0	44.8	41.2	36.1	33.3
Frequency										
12.5 Hz	63.8	71.5	67.0	62.1	56.9	73.0	79.7	76.5	71.5	65.9
16 Hz	65.3	71.4	68.4	64.3	59.6	72.2	78.7	75.5	70.9	66.0
20 Hz	69.0	74.6	72.1	68.1	63.9	73.0	78.9	76.1	72.1	67.6
25 Hz	70.4	75.7	73.2	69.7	66.0	72.8	78.4	75.8	72.0	67.9
31.5 Hz	70.5	75.6	73.1	69.8	66.3	71.9	77.2	74.6	71.1	67.5
40 Hz	70.9	75.7	73.4	70.4	67.1	72.3	77.3	75.0	71.6	68.1
50 Hz	70.8	75.4	73.1	70.3	67.5	71.6	76.3	74.1	71.1	67.9
63 Hz	74.7	79.0	76.9	74.3	71.4	71.5	75.9	73.9	71.1	68.2
80 Hz	69.8	74.4	72.1	69.4	66.7	68.3	73.6	70.8	67.6	64.7
100 Hz	67.8	71.9	69.9	67.4	65.0	67.1	72.5	69.6	66.4	63.7
125 Hz	69.1	73.1	71.2	68.7	66.4	69.0	73.4	71.2	68.6	65.9
160 Hz	66.1	70.2	68.2	65.7	63.4	68.4	72.9	70.6	68.0	65.4
200 Hz	63.8	68.8	66.3	63.2	60.1	68.6	73.2	71.0	68.3	65.1
250 Hz	55.3	59.8	57.3	54.8	52.9	64.8	70.9	67.7	63.6	60.8
315 Hz	55.0	59.6	57.1	54.5	52.3	63.6	69.6	66.4	62.6	59.5
400 Hz	56.1	60.0	58.0	55.7	53.6	62.8	68.7	65.4	61.9	58.9
500 Hz	55.6	59.8	57.3	55.2	53.3	61.7	68.3	64.8	60.3	56.8
630 Hz	55.9	60.1	57.6	55.6	53.9	61.8	67.8	64.3	60.9	58.1
800 Hz	54.2	58.5	55.9	53.7	51.9	59.8	66.1	62.6	58.8	56.0
1 kHz	52.8	57.8	54.7	52.3	50.4	58.4	65.0	61.5	57.0	53.8
1.25 kHz	52.7	57.0	54.2	52.2	50.4	57.2	63.1	60.0	56.2	53.6
1.6 kHz	51.0	55.2	52.7	50.5	48.7	55.6	61.2	58.1	54.9	52.5
2 kHz	49.4	53.5	51.0	48.9	47.1	54.5	60.1	57.0	53.7	51.4
2.5 kHz	48.0	52.5	49.7	47.3	45.6	52.4	57.6	54.7	51.7	49.5
3.15 kHz	46.2	51.2	48.1	45.6	43.7	49.9	54.5	52.0	49.4	47.4
4 kHz	41.3	46.2	42.9	40.3	38.7	45.9	51.6	48.2	45.0	43.0
5 kHz	35.1	41.0	36.0	33.3	31.6	41.0	47.1	43.6	39.8	37.9
6.3 kHz	29.7	37.5	29.2	25.8	24.0	35.9	42.3	38.7	34.5	32.4
8 kHz	25.6	34.1	23.3	18.5	16.2	32.1	39.3	35.8	29.6	25.2
10 kHz	22.0	31.7	20.0	14.5	11.9	28.9	36.8	32.9	25.9	19.1
12.5 kHz	18.8	28.8	17.2	12.4	10.6	26.0	33.8	29.8	22.6	15.3

Meter Conversion

Description of the Site:

Address in Meter:	OML-6					OML-6					OML-6	
Date:	07/26/2001					07/27/2001					07/27/2001	
Start Time:	18:28:14					0:42:06					11:56:52	
Duration:	900					900					900	
Time Constant:	Fast					Fast					Fast	
Weighting:	Flat					Flat					Flat	
Sub Time Constant:	Fast					Fast					Fast	
Sub Weighting:	A					A					A	
	Leq	**L1**	**L10**	**L50**	**L90**	**Leq**	**L1**	**L10**	**L50**	**L90**	**Leq**	**L1**
Main	90.5	97.8	93.9	88.7	85.4	84.9	93.2	87.5	83	80.8	85.6	88.1
Sub	67.3	70.1	68.6	67.1	65.7	68.5	72	70.1	68.3	66.8	69.1	71.9
Calculated Octaves												
16 Hz	83.5	91.5	87.0	81.3	75.8	76.5	85.3	79.9	73.9	68.4	76.4	82.8
31 Hz	81.4	88.3	84.4	80.2	76.3	73.7	80.5	76.4	72.5	68.9	76.9	82.1
63 Hz	78.4	84.4	80.7	77.6	74.7	73.7	78.1	76.0	73.3	70.6	75.8	80.3
125 Hz	75.7	81.3	77.8	75.1	72.4	75.9	79.7	77.8	75.6	73.3	75.3	79.3
250 Hz	69.4	77.7	71.4	68.3	65.3	70.4	74.1	72.5	70.0	67.6	73.5	78.0
500 Hz	63.8	73.8	65.0	62.2	60.0	61.6	65.7	63.6	61.2	59.0	66.5	72.1
1 kHz	62.3	69.0	63.8	61.5	59.7	63.0	68.3	65.5	62.3	59.7	63.6	69.0
2 kHz	58.6	62.7	60.1	58.3	56.6	61.9	66.4	64.0	61.5	59.6	59.6	64.4
4 kHz	51.6	55.9	53.0	51.1	49.3	54.4	57.9	56.1	54.2	52.5	52.7	57.2
8 kHz	40.7	51.5	41.1	36.5	34.2	38.1	41.9	39.5	37.8	36.4	38.3	45.1
Frequency												
12.5 Hz	79.4	87.9	83.0	76.8	70.6	72.6	81.6	76.1	69.6	63.6	71.7	78.8
16 Hz	78.4	86.5	82.0	76.1	70.3	71.5	80.4	74.9	68.9	63.4	71.2	77.7
20 Hz	78.3	85.6	81.6	76.6	71.9	70.9	79.1	74.0	69.0	63.9	71.9	77.6
25 Hz	77.4	84.7	80.5	75.9	71.7	69.1	77.2	72.0	67.3	63.2	72.1	77.5
31.5 Hz	76.3	83.2	79.3	75.1	71.2	69.2	75.6	71.9	68.0	64.2	71.6	76.8
40 Hz	76.2	82.3	78.9	75.2	71.7	68.6	73.9	71.0	67.9	64.8	72.6	77.7
50 Hz	74.7	80.5	77.2	73.9	70.9	69.9	74.5	72.2	69.4	66.7	72.2	76.8
63 Hz	74.3	79.9	76.6	73.7	70.8	70.1	74.4	72.4	69.7	66.9	71.2	75.6
80 Hz	70.8	78.0	72.8	69.8	67.2	65.5	69.4	67.5	65.2	62.9	69.0	73.4
100 Hz	70.0	76.3	71.9	69.3	66.8	69.7	73.4	71.7	69.4	67.1	68.8	73.1
125 Hz	72.5	77.5	74.7	72.0	69.4	72.9	76.8	74.9	72.6	70.3	71.4	75.4
160 Hz	69.6	75.4	71.7	68.9	66.1	69.9	73.6	71.8	69.7	67.6	70.9	74.7
200 Hz	67.6	73.7	70.1	66.7	63.4	69.4	73.2	71.6	69.0	66.4	71.7	75.8
250 Hz	62.6	73.2	63.4	60.9	58.8	61.6	64.8	63.3	61.5	59.7	66.9	71.8
315 Hz	60.9	71.6	61.5	58.9	56.6	58.7	62.2	60.5	58.4	56.4	64.7	70.1
400 Hz	59.7	69.5	61.2	58.0	55.4	58.0	61.8	60.0	57.7	55.6	63.1	68.4
500 Hz	58.5	69.5	59.4	56.2	54.0	56.2	60.4	58.3	55.8	53.5	61.1	67.2
630 Hz	58.9	67.9	59.9	57.8	56.0	55.9	60.3	57.9	55.4	53.3	60.5	66.1
800 Hz	57.9	65.3	59.4	57.0	55.2	57.4	62.7	59.9	56.5	54.0	59.4	64.7
1 kHz	57.4	64.4	59.1	56.6	54.6	58.4	63.7	61.0	57.7	55.0	58.9	64.6
1.25 kHz	57.1	62.5	58.6	56.6	55.0	58.8	64.0	61.2	58.1	55.6	58.2	63.2
1.6 kHz	55.4	59.6	56.9	55.1	53.5	58.4	63.4	60.6	57.8	55.8	56.1	60.9
2 kHz	53.6	57.8	55.0	53.3	51.5	57.4	61.6	59.3	57.1	55.2	54.8	59.8
2.5 kHz	51.7	55.4	53.3	51.6	49.6	55.1	58.9	56.9	54.8	53.1	52.9	57.4
3.15 kHz	49.7	53.2	51.2	49.4	47.5	52.4	55.9	54.1	52.2	50.5	50.9	54.9
4 kHz	45.9	50.4	47.1	45.2	43.5	49.1	52.5	50.7	48.9	47.2	46.9	52.0
5 kHz	41.4	48.7	42.6	40.0	38.4	43.3	46.9	44.9	43.1	41.5	41.8	47.8
6.3 kHz	38.1	47.7	38.7	34.7	32.8	37.3	40.7	38.7	37.1	35.6	36.5	42.8
8 kHz	35.1	47.0	35.5	29.9	27.0	29.8	34.7	31.2	29.3	27.7	32.1	39.4
10 kHz	33.0	45.3	32.5	26.9	23.2	19.8	28.3	20.6	20.1	20.1	28.5	36.8
12.5 kHz	30.5	43.0	28.9	22.7	20.1	14.1	23.4	20.1	20.1	20.1	25.6	34.0

Meter Conversion

Description of the Site:

Address in Meter:				OML-7					OML-7					
Date:				07/26/2001					07/26/2001					
Start Time:				11:00:47					18:44:17					
Duration:				900					900					
Time Constant:				Fast					Fast					
Weighting:				Flat					Flat					
Sub Time Constant:				Fast					Fast					
Sub Weighting:				A					A					
	L10	**L50**	**L90**	**Leq**	**L1**	**L10**	**L50**	**L90**	**Leq**	**L1**	**L10**	**L50**	**L90**	
Main	87.2	85.5	83.7	84.7	88.4	87.1	84.3	81.6	90.8	97.6	94.4	89.1	85.3	
Sub	70.6	69	67.6	65.6	73.6	65.2	63.6	62.2	66	68.3	67.1	65.8	64.9	
Calculated Octaves														
16 Hz	79.6	75.2	70.5	77.1	84.2	80.5	75.3	70.1	84.0	91.8	87.7	81.9	76.1	
31 Hz	79.6	76.3	72.6	77.1	82.6	80.0	76.4	72.6	81.4	88.4	84.5	79.9	75.5	
63 Hz	78.1	75.3	72.4	75.8	80.3	78.0	75.4	72.7	78.3	84.3	80.6	77.6	74.7	
125 Hz	77.3	75.0	72.5	68.9	75.7	71.3	67.8	65.4	71.2	78.7	72.9	70.3	67.9	
250 Hz	75.8	73.1	70.3	64.2	73.1	67.3	61.7	59.0	63.7	74.6	64.3	61.7	59.5	
500 Hz	69.1	65.6	62.9	62.1	71.1	64.8	59.6	57.3	62.9	71.3	63.9	62.0	60.3	
1 kHz	66.1	62.9	60.5	60.7	68.9	62.4	58.9	56.8	61.8	67.1	63.1	61.4	60.0	
2 kHz	61.6	59.0	57.2	58.6	67.6	58.6	56.1	54.0	58.4	61.6	59.6	58.2	56.9	
4 kHz	54.6	52.3	50.6	53.3	63.2	51.7	49.5	47.6	51.6	55.1	53.2	51.3	49.9	
8 kHz	41.2	36.0	33.9	44.2	55.6	40.6	37.2	35.3	44.2	48.8	46.7	43.6	41.3	
Frequency														
12.5 Hz	75.2	70.2	64.5	72.7	80.2	76.4	70.5	64.4	79.9	88.0	83.6	77.4	71.3	
16 Hz	74.5	69.9	65.2	72.2	79.5	75.5	70.6	65.3	79.1	86.7	82.9	77.1	71.3	
20 Hz	74.8	71.1	67.0	71.9	78.5	75.2	70.6	66.0	78.7	86.2	82.2	76.8	71.3	
25 Hz	74.9	71.3	67.4	72.9	78.4	75.8	72.1	68.2	77.8	85.0	81.1	76.3	71.6	
31.5 Hz	74.3	71.0	67.4	72.2	77.5	75.0	71.6	67.9	76.2	83.3	79.4	74.7	70.4	
40 Hz	75.2	72.1	68.6	71.9	77.5	74.7	71.2	67.5	75.4	82.2	78.2	74.2	70.1	
50 Hz	74.6	71.7	68.6	70.8	75.6	73.3	70.3	67.2	74.2	80.6	76.8	73.3	70.1	
63 Hz	73.5	70.8	67.9	73.0	77.0	74.9	72.7	70.1	74.9	80.1	77.0	74.4	71.7	
80 Hz	71.2	68.6	65.9	68.0	73.4	70.3	67.4	64.8	70.4	77.2	72.4	69.5	66.8	
100 Hz	70.9	68.4	66.0	64.5	71.6	67.0	63.4	61.0	67.7	75.0	69.4	66.9	64.6	
125 Hz	73.4	71.1	68.6	64.9	71.5	67.2	64.0	61.5	67.1	74.1	68.8	66.2	63.8	
160 Hz	73.0	70.7	68.3	62.5	69.2	65.0	61.4	58.8	63.4	72.4	64.8	62.0	59.5	
200 Hz	74.0	71.3	68.4	60.7	67.7	63.5	59.2	56.3	60.2	70.3	61.4	58.4	56.0	
250 Hz	69.1	66.4	63.9	59.3	69.0	62.6	56.1	53.4	58.2	70.2	58.0	55.5	53.5	
315 Hz	67.1	64.1	61.6	57.9	68.2	61.0	54.0	51.5	58.0	68.7	58.3	56.2	54.4	
400 Hz	65.5	62.4	59.8	56.6	65.7	59.8	53.8	51.4	57.3	66.7	57.9	56.0	54.3	
500 Hz	64.0	60.0	56.8	57.3	67.0	60.2	53.9	51.6	57.3	66.8	58.2	56.1	54.4	
630 Hz	63.0	59.7	57.3	58.1	66.3	60.1	56.4	54.0	59.5	65.9	60.8	58.9	57.3	
800 Hz	61.9	58.6	56.1	56.6	65.0	58.4	54.7	52.6	58.2	63.8	59.5	57.7	56.3	
1 kHz	61.6	58.0	55.3	55.7	64.2	57.5	53.7	51.7	56.6	62.3	57.9	56.1	54.7	
1.25 kHz	60.4	57.6	55.6	55.3	62.9	56.7	53.9	51.8	56.0	60.2	57.2	55.7	54.5	
1.6 kHz	58.1	55.6	53.8	54.2	61.8	55.3	52.7	50.5	55.2	58.8	56.4	55.0	53.7	
2 kHz	56.9	54.2	52.4	53.8	63.1	53.9	51.3	49.1	53.4	56.4	54.6	53.2	52.0	
2.5 kHz	54.8	52.4	50.5	53.5	63.5	51.7	49.4	47.4	51.4	54.2	52.7	51.2	50.1	
3.15 kHz	52.7	50.6	48.9	50.5	60.4	49.7	47.4	45.4	49.1	52.3	50.6	48.9	47.6	
4 kHz	48.9	46.2	44.7	48.5	58.0	46.1	43.9	42.1	46.2	49.9	47.9	45.9	44.5	
5 kHz	44.0	40.7	39.1	45.0	55.5	41.8	39.7	37.9	43.2	47.5	45.3	42.7	41.0	
6.3 kHz	38.9	34.7	33.1	41.5	52.5	37.9	35.3	33.6	41.1	45.7	43.5	40.6	38.4	
8 kHz	35.6	28.8	25.4	39.0	50.5	35.3	31.1	28.9	39.2	43.9	41.7	38.6	36.2	
10 kHz	32.6	24.5	18.5	36.4	48.6	32.7	27.8	25.2	37.0	41.7	39.6	36.3	33.7	
12.5 kHz	29.6	21.2	14.6	33.1	46.0	29.6	24.5	21.6	34.2	39.2	36.9	33.4	30.6	

Meter Conversion

Description of the Site:

Address in Meter:	OML-7					OML-7				
Date:	07/27/2001					07/27/2001				
Start Time:	0:24:53					12:14:15				
Duration:	900					900				
Time Constant:	Fast					Fast				
Weighting:	Flat					Flat				
Sub Time Constant:	Fast					Fast				
Sub Weighting:	A					A				
	Leq	**L1**	**L10**	**L50**	**L90**	**Leq**	**L1**	**L10**	**L50**	**L90**
Main	82.6	89.8	85.4	81.1	78.2	84.5	88.1	86.8	84.1	81.2
Sub	63.4	66.1	64.6	63.3	62	63.4	65.8	64.6	63.4	62.3
Calculated Octaves										
16 Hz	75.3	83.8	78.8	73.0	67.4	77.2	83.8	80.5	75.8	70.6
31 Hz	72.8	79.3	75.7	71.8	67.9	76.9	82.2	79.7	76.2	72.5
63 Hz	72.2	76.4	74.4	71.8	69.2	73.7	78.4	75.9	73.1	70.4
125 Hz	69.9	73.7	71.9	69.7	67.3	68.8	74.4	70.9	68.2	65.8
250 Hz	58.2	61.8	60.1	58.0	56.0	64.2	71.3	66.8	63.0	60.1
500 Hz	57.7	60.8	59.3	57.5	55.9	60.6	68.1	62.9	59.2	57.0
1 kHz	58.8	62.5	60.4	58.6	57.0	59.1	65.5	60.8	58.3	56.6
2 kHz	57.1	60.6	58.7	56.9	55.3	56.3	60.8	57.8	55.9	54.4
4 kHz	49.4	53.0	50.9	49.2	47.7	48.4	53.3	49.5	47.9	46.5
8 kHz	35.1	38.1	36.6	34.9	33.4	37.7	48.1	37.3	33.8	32.1
Frequency										
12.5 Hz	71.5	80.1	75.1	68.9	62.7	72.8	79.8	76.4	71.2	65.2
16 Hz	70.8	79.4	74.1	68.5	63.2	72.4	79.1	75.7	70.9	65.8
20 Hz	69.0	77.2	72.3	66.9	62.0	72.0	78.1	75.0	70.9	66.4
25 Hz	69.2	76.4	72.3	67.9	63.6	73.2	78.5	76.1	72.5	68.5
31.5 Hz	67.5	73.7	70.3	66.5	62.9	71.7	76.9	74.4	70.9	67.4
40 Hz	67.2	72.5	69.8	66.6	63.0	71.3	76.6	74.0	70.6	67.1
50 Hz	67.2	71.7	69.5	66.7	63.8	69.7	74.5	72.1	69.1	66.2
63 Hz	69.0	73.1	71.2	68.6	65.9	69.7	74.0	71.9	69.3	66.7
80 Hz	65.5	69.4	67.6	65.2	62.9	66.6	71.9	68.8	66.0	63.4
100 Hz	65.8	69.4	67.7	65.5	63.3	63.5	70.0	65.7	62.6	60.2
125 Hz	66.9	70.7	69.0	66.6	64.1	65.4	70.0	67.4	64.9	62.5
160 Hz	60.7	64.4	62.6	60.5	58.4	62.9	68.7	65.0	62.2	59.7
200 Hz	55.8	59.7	57.9	55.5	53.2	62.1	67.5	64.7	61.3	58.1
250 Hz	52.2	55.4	53.9	52.0	50.2	57.9	66.7	60.4	56.0	53.6
315 Hz	50.8	53.7	52.3	50.7	49.1	56.1	65.2	58.8	53.9	51.5
400 Hz	51.9	54.9	53.4	51.8	50.3	55.0	63.4	57.6	53.2	50.8
500 Hz	52.5	55.5	54.0	52.3	50.6	54.9	63.2	57.6	52.9	50.6
630 Hz	54.1	57.4	55.7	53.9	52.2	57.1	63.3	59.0	56.4	54.3
800 Hz	54.0	57.2	55.5	53.8	52.3	55.2	61.6	56.9	54.4	52.7
1 kHz	54.3	58.3	56.0	54.0	52.4	53.6	60.8	55.6	52.5	50.7
1.25 kHz	53.9	57.7	55.5	53.6	52.1	53.9	59.5	55.6	53.4	51.8
1.6 kHz	54.0	57.4	55.5	53.8	52.2	53.1	57.6	54.7	52.8	51.2
2 kHz	52.2	55.6	53.8	52.0	50.4	51.5	56.2	52.9	51.1	49.6
2.5 kHz	49.9	53.6	51.5	49.7	48.2	49.0	53.5	50.5	48.7	47.2
3.15 kHz	47.1	50.9	48.6	46.8	45.3	46.5	50.7	47.8	46.2	44.7
4 kHz	44.4	47.9	45.9	44.3	42.9	42.5	47.8	43.5	41.9	40.6
5 kHz	39.0	42.3	40.4	38.9	37.3	38.1	45.7	38.7	36.6	35.4
6.3 kHz	34.0	36.7	35.3	33.9	32.4	34.8	44.4	34.8	31.8	30.5
8 kHz	27.4	30.9	29.2	27.1	25.2	32.6	43.7	31.9	27.8	25.4
10 kHz	22.4	27.4	24.9	21.8	20.1	30.3	41.5	29.2	24.7	21.7
12.5 kHz	19.2	24.5	21.8	20.1	20.1	27.5	39.1	26.1	21.5	18.3

APPENDIX 4

Proposed Amendments to the Conditions of Certification

APPENDIX 4

Proposed Revisions to Existing Conditions of Certification

PG&E request the following amendments to the existing Conditions of Certification, which are necessary to support the amendment from wet cooling to dry cooling. Most of the amendments relate to specific requirements originally imposed upon the operation of the wet cooling tower or to use of river water. In addition, where applicable PG&E proposes modifications to Conditions to Certification, which are otherwise no longer applicable.

Deletions are shown with ~~strikethrough~~ and additions are shown in ***bold and italics***. The reason for each modification is shown in parenthesis.

AQC-1 During construction of this facility, the following fugitive emission control measures shall be implemented at the plant site:

a. Suspend all land clearing, grading, earth moving, or excavation activities when winds (including instantaneous gusts) exceed 20 miles per hour.

b. Apply water to active construction sites and unpaved roads ~~at least twice daily~~ as frequently as necessary to control fugitive dust. The frequency of watering can be reduced or eliminated during periods of precipitation.

c. Apply sufficient water or dust suppressants to all material excavated, stockpiled, or graded to prevent fugitive dust from leaving the property boundaries and causing a public nuisance or a violation of an ambient air standard.

d. Apply a non-toxic solid stabilizer to all inactive construction areas (previously graded areas which remain inactive for 96 hours).

e. No on-site vehicle shall exceed a speed of 15~~0~~ miles per hour on unpaved roads or areas.

f. All trucks hauling dirt, sand, soil, or other loose material will be watered or covered and will maintain at least two feet of freeboard to prevent a public nuisance.

g. Install wheel washers where vehicles enter and exit unpaved roads onto paved roads, or wash off trucks and any equipment leaving the site each trip.

h. ~~Sweep streets with a water sweeper at the end of each day if~~ At least the first 500 feet of any public roadway exiting from the construction site shall be swept at least twice daily (or less during periods of precipitation) on days when construction activity occurs or on any other day when visible soil materials are carried onto adjacent public or private paved roads.

i. Re-establish ground cover on the construction site through seeding and watering as soon as possible, but no later than final occupancy.

j. Implement all dust control measures in a timely and effective manner during all phases of project development and construction.

k. Place sandbags adjacent to roadways to prevent run off to public roadways.

l. Install wind breaks at the windward sides of construction areas prior to the soil being disturbed. The wind breaks shall remain in place until the soil is stabilized or permanently covered.

~~m. Limit construction vehicles and equipment idle time to no more than 5 minutes.~~

m. Provide gravel ramps of at least 20 feet in length at the tire washing/cleaning station.
n. Gravel or treat all unpaved exits from the construction site to prevent track-out to public roadways.
o. Ensure that all construction vehicles enter the construction site through the treated entrance roadways, unless an alternative route has been submitted to and approved by the CPM.
p. Sweep all paved roads within the construction site at least twice daily (or less during periods of precipitation) on days when construction activity occurs to prevent the accumulation of dirt and debris.

Verification: The project owner shall maintain a daily log of water truck activities, including record of the frequency of public road cleaning. These logs and records shall be available for inspection by the CPM during the construction period. The project owner shall identify in the monthly construction reports, the area(s) that the project owner shall cover or treat with dust suppressants. The project owner shall make the construction site available to the District and the City of Antioch inspection staff and the CPM for inspection and monitoring.

AQC-2 The project owner shall employ the following measures to mitigate, to the extent practical, construction-related emission impacts from off-road, Diesel-fired construction equipment. These measures include the use of oxidizing soot filters, oxidizing catalysts, Diesel fuel certified to CARB low sulfur fuel standards (sulfur content less than 15 ppm) and Diesel engines that are either equipped with high pressure fuel injection, employ fuel injection timing retardation or are certified to EPA Tier 2 off-road equipment emission standards. Additionally, the project owner shall restrict idle time, to the extent practical, to no more than 5 minutes.

The use of each mitigation measure is to be determined by an Air Quality Construction Mitigation Manager (AQCMM) ~~qualified independent California Licensed Mechanical Engineer (ME)~~. The AQCMM ~~ME~~ is to be approved by the CPM prior to the submission of any reports. The AQCMM ~~ME~~ will determine the mitigation measures to be used within the following framework.

Construction Mitigation Framework
1. No measure or combination of measures shall be allowed to significantly delay the project construction or construction of related linear facilities.
2. No measure or combination of measures shall be allowed to cause significant damage to the construction equipment or cause a significant risk to on site workers or the public.
3. Engines certified to Tier 2 off-road equipment emission standards and CARB certified low sulfur Diesel fuel may be used in lieu of oxidizing soot filter and oxidizing catalyst.

The AQCMM will, in consultation with the California Air Resources Board (CARB), submit the following reports to the CPM for approval:

- Construction Mitigation Plan
- Reports of Change and Mitigation Implementation
- Emergency Termination of Mitigation Reports (as necessary)

Construction Mitigation Plan

The Construction Mitigation Plan shall be submitted to the CPM for approval prior to ~~rough grading~~ resuming construction activities on the project site and will include:

1. A list of all Diesel fuel burning, off-road stationary or portable construction related equipment to be used either on the project construction site or the construction sites of the related linear facilities.

~~2. All equipment listed under (1) shall be identified as either using engines certified to EPA and CARB 1996 or better off-road equipment emission standards, using diesel engines that are equipped with high pressure fuel injection, or using Diesel engines that employ fuel injection timing retardation.~~

~~3. The determination of the suitability of all equipment listed under (1) to work appropriately with an oxidizing catalyst shall be identified except as provided for in item 2 of the Construction Mitigation Framework above. If a piece of equipment is determined to be unsuitable for an oxidizing catalyst, the ME will provide an explanation as to the cause of this determination.~~

~~4. The determination of the suitability of all equipment listed under (1) to work appropriately with an oxidizing soot filter shall be identified except as provided for in item 2 of the Construction Mitigation Framework above. If a piece of equipment is determined to be unsuitable for an oxidizing-soot filter, the ME will provide an explanation as to the cause of this determination.~~

2. All construction Diesel engines, which have a rating of 100 hp or more, shall meet, at a minimum, the Tier 2 California Emission Standards for Off-Road Compression-Ignition Engines as specified in California Code of Regulations, Title 13, section 2423(b)(1) unless certified by the on-site AQCMM that such engine is not available for a particular item of equipment. In the event a Tier 2 engine is not available for any off-road engine larger than 100 hp, that item of equipment shall be equipped with a Tier 1 engine. In the event a Tier 1 item of equipment is not available for any off-road engine larger than 100 hp, that engine shall be equipped with a catalyzed Diesel particulate filter (soot filter), unless certified by engine manufacturers or the on-site AQCMM that the use of such devices is not practical for specific engine types. For purposes of this condition, the use of such devices is "not practical" if, among other reasons:

   a) There is no available soot filter that has been certified by either the California Air Resources Board or U.S. Environmental Protection Agency for the engine in question; or

   b) The construction equipment is intended to be on-site for ten (10) days or less.

   c) The CPM may grant relief from this requirement if the AQCMM can demonstrate that they have made a good faith effort to comply with this requirement and that compliance is not possible.

3. All heavy earthmoving equipment and heavy-duty construction related trucks with engines meeting the requirements of (3) above shall be properly maintained and the engines tuned to the engine manufacturer's specifications.

~~5~~4. ~~Maximum idle times shall be identified for all equipment listed under (1).~~ All Diesel heavy construction equipment shall not remain running at idle for more than five minutes, to the extent practical.

~~6~~5. The sulfur content of all Diesel fuel to be burned in any equipment ~~listed under (1) shall be identified~~ used at the construction site shall be ultra-low sulfur Diesel, which contains no more than 15 ppm sulfur.

Report of Change and Mitigation Implementation
The ~~ME~~ AQCMM shall submit a Report of Change and Mitigation Implementation for approval to the CPM following the initiation of construction activities, which contains at a minimum the cause of any deviation from the Construction Mitigation Plan, and verification of the Construction Mitigation Plan measures that were implemented. Verification includes, but shall not be limited to, the following:
1. EPA or CARB engine certifications for item 2 of the Construction Mitigation Plan.
2. A copy of the contract agreement requiring subcontractors to comply with the elements under item 2 of the Construction Mitigation Plan.
3. Confirmation of the installation of either oxidizing catalysts or oxidizing soot filters as identified in items 2 and 3 ~~and 4~~ of the Construction Mitigation Plan or the cause preventing the identified installations.
4. A copy of the contract agreement requiring subcontractors to comply with the elements under item 4 ~~5~~ of the Construction Mitigation Plan.
5. A copy of receipts of purchase of Diesel fuel indicating the sulfur content as identified in item 5 ~~6~~ of the Construction Mitigation Plan.

Emergency Termination of Mitigation Report
If a specific mitigation measure is determined to be detrimental to a piece of construction equipment or is determined to be causing significant delays in the construction schedule of the project or the associated linear facilities, the mitigation measure may be eliminated or terminated immediately. However notification must be sent to the CPM for approval containing an explanation for the cause of the termination. All such causes are restricted to one of the following justifications and must be identified in any Emergency Termination of Mitigation Report.
1. The measure is excessively reducing normal availability of the construction equipment due to increased downtime for maintenance, and/or power output due to an excessive increase in back pressure.
2. The measure is causing or reasonably expected to cause significant damage to the construction equipment engine.
3. The measure is causing or reasonably expected to cause a significant risk to nearby workers or the public.
4. Any other seriously detrimental cause which has approval by the CPM prior to the change being implemented.

Verification: The project owner shall submit the qualifications of the ~~ME~~ AQCMM and the Construction Mitigation Plan to the CPM for approval ~~at least 30 calendar days~~ prior to ~~rough grading~~ resuming construction activities on the project site. The project owner shall submit the Report of Change and Mitigation Implementation to the CPM for approval no later than 10 working days following the use of the specific construction equipment on either the project site or the associated linear facilities. The project owner shall submit any Emergency Termination of Mitigation Reports to the CPM for approval, as required, no later than 10 working days following the termination of any identified mitigation measure. The CPM will monitor the approval of all reports submitted by the project owner in consultation with CARB, limiting the review time for any one report to no more than 20 working days.

AQ-45 The ~~cooling towers~~wet surface air cooler (WSAC) shall be properly installed and maintained to minimize drift losses. The ~~cooling towers~~WSAC shall be equipped with ~~high-efficiency mist~~drift eliminators with a maximum guaranteed drift rate of 0.003~~05~~%. The maximum total dissolved solids (TDS) measured at the base of the ~~cooling towers~~ WSAC or at the point of return to the wastewater facility

shall not be higher than ~~5,666~~2,500 ppmw (mg/l). The owner/operator shall sample the water at least ~~once per day~~quarterly. (PSD)

Verification: At least 30 days prior to commencement of cooling tower construction, the project owner/operator shall provide to the District and CEC CPM a copy of the cooling tower manufacturer's specifications demonstrating the 0.003~~05~~ percent drift rate.

(Wet Cooling Tower ~~Eliminated~~replaced with Wet Surface Air Cooler)

~~**AQ-46** The owner/operator shall perform a visual inspection of the cooling tower drift eliminators at least once per calendar year, and repair or replace any drift eliminator components which are broken or missing. Prior to the initial operation of the CCPP Unit 8, the owner/operator shall have the cooling tower vendor's field representative insect the cooling tower drift eliminators and certify that the installation was performed in a satisfactory manner. The CPM may, in years 5 and 15 of the cooling tower operation, require the owner/operator to perform a source test to determine the PM10 emission rate from the cooling tower to verify continued compliance with the vendor-guaranteed drift rate specified in conditions AQ-45. (PSD)~~

~~**Verification:** The project owner/operator shall keep records of all tower inspection and shall make them available for the District and CEC CPM upon request.~~

(Wet Cooling Tower Eliminated)

~~**PUBLIC HEALTH-1** The project owner shall perform a visual inspection of the cooling tower drift eliminators once per calendar year, and repair or replace any drift eliminator components which are broken or missing. Prior to initial operation of the project, the project owner shall have the cooling tower vendor's field representative inspect the cooling tower drift eliminator and certify that the installation was performed in a satisfactory manner. The CPM may, in years 5 and 15 of the project operation, require the project owner to perform a source test of the PM10 emissions rate from the cooling tower to verify continued compliance with the vendor guaranteed drift rate.~~

~~**Verification:** The project owner shall include the results of the annual inspection of the cooling tower drift eliminators and a description of any repairs performed in the next required quarterly compliance report. The initial compliance report w2ill include a copy of the cooling tower vendor's field representative's inspection report of the drift eliminator installation. If the CPM requires a source test as specified in Public Helath-1, the project owner shall submit to the CPM for approval a detailed source test procedure 60 days prior to the test. The project owner shall incorporate the CPM<'s comments, conduct testing, and submit test results to the CPM within 60 days following the tests~~.

NOISE-6 ~~Prior to initiating construction, the project owner shall conduct a 25-hour community noise survey at the closest noise sensitive receptor (applicant's OML5 location), and shall conduct short-term noise measurements during daytime, evening and nighttime hours at locations OML6 and OML7.~~

The project design and implementation shall include appropriate noise mitigation measures adequate to ensure that the project will not cause resultant noise levels to exceed the ambient background noise level (L_{90}) at ~~residential receivers~~ OML5 (64 dBA), OML6 (64 dBA) and OML7 (62 dBA) by more than ~~3~~ 5 dBA.

Within 30 days of the project first achieving a sustained output of 80 percent or greater of rated capacity, the project owner shall conduct 25-hour community noise survey ~~short-term survey noise measurements~~ at OML5, OML6 and OML7. ~~Based upon the survey noise measurements, the applicant shall conduct an additional 25-hour community noise survey at the site which experiences the highest project-related noise levels.~~ The measurement of power plant noise for purposes of demonstrating compliance with this Condition of Exemption may alternatively be made at a location, acceptable to the CPM and the applicant, closer to the plant (e.g., 400 feet from the plant boundary) and this measured level then mathematically extrapolated to determine the plant noise contribution at the nearest residence. However, notwithstanding the use of this alternative method for determining the noise level, the character of the plant noise shall be evaluated at OML5, OML6 and OML7 to determine the presence of pure tones or other dominant sources of plant noise. ~~The survey during power plant operations shall also include measurement of one-third octave band sound pressure levels to ensure that no new pure-tone noise components have been introduced.~~ No single piece of equipment shall be allowed to stand out as a source of noise that draws legitimate complaints. Steam relief valves shall be adequately muffled to preclude noise that draws legitimate complaints.

If the results from the ~~two~~ noise surveys ~~(pre-construction vs. operations)~~ indicate that the background noise level (L_{90}) ~~at~~ attributable to the project ~~the most affected receptor has~~ increased by more than ~~3~~ 5 dBA for the average nighttime (10:00 p.m. - 7:00 a.m.) L_{90} during the 25-hour period, additional mitigation measures shall be implemented to reduce noise to a level of compliance with this limit.

Verification: Within 15 days after completing the survey, the project owner shall submit a summary report of the survey to the Contra Costa County Community Development Department, to the City of Antioch, and to the CPM. Included in the report will be a description of any additional mitigation measures necessary to achieve compliance with the above listed noise limits, and a schedule, subject to CPM approval, for implementing these measures. Within 15 days of completion of installation of these measures, the project owner shall submit to the CPM a summary report of a new noise survey, performed as described above and showing compliance with this condition.

Allowable Noise Levels at residential receptors (dBA)

Location	Cumulative Noise Level
OML5	**69**
OML6	**69**
OML7	**67**

VIS-4 h. If requested by resident caretakers at the San Joaquin Yacht Harbor, off-site tree planting shall be provided to screen views of the proposed ~~cooling tower~~ ***air cooled condenser*** from these residences. Such screening shall consist of plantings of sufficient size to ensure ~~substantial~~ ***feasible*** screening within a period of five (5) years.

(Replacement of Wet Cooling Tower with Air Cooled Condenser)

~~**VIS-6** The project owner shall design the cooling tower with a flow rate of no less than 7,500 kg/sec.~~

~~**Verification:** Thirty (30) days prior to cooling tower construction, the project owner shall submit final cooling tower design specifications to the CPM for review and approval.~~

(Wet Cooling Tower Eliminated)

~~**VIS-7** The project owner shall mitigate potential driving hazards on local roads due to ground-level cooling tower plumes from the project.~~

~~**Verification:** Ninety (90) days prior to commercial operation, the project owner shall submit to the CPM for review and approval a plant to mitigate driving hazards on adjacent roads (e.g., Wilbur Avenue) due to ground-level plumes from the project.~~

(Wet Cooling Tower Eliminated)

BIO-5 The project owner will implement the mitigation measures proposed in Application for Certification regarding biological resources (Southern 2000a, pages 8.2-13 to 8.2-14). The project owner's proposed mitigation measures will be incorporated into the final Biological Resources Mitigation Implementation and Monitoring Plan (see Condition of Certification **BIO-8**, below) ~~unless mitigation measures are inconsistent with the mitigation measure required by the U.S. Fish and Wildlife Service, National Marine Fisheries Service, and the California Department of Fish and Game in their respective Biological Opinions and Incidental Take Statements(s) or Permit(s), 20801 permit, or in the State Streambed Alteration Agreement~~.

Protocol: The project owner will make certain the following are completed:

1. Upon completion of the construction, all areas subject to temporary ground disturbance will be subject to post-construction cleanup.

2. All grass areas subject to temporary disturbance due to construction activities will be seeded with an appropriate grassland seed mix.

3. In accordance with the Contra Costa tree ordinance, Tree Protection and Preservation (chapter 816-6), all oak trees removed will be replaced onsite with a minimum replacement ratio of 2:1. Removal of trees will be conducted during the non-breeding season for local birds (September-January)

4. The applicant shall establish erosions control measures to minimize the terrestrial and airborne movement of soils, sediments, and other substances into the San Joaquin River or connected waterways, as described in the AFC pages 8.9-4 and 8.9-5.

5. If tree removal is to be undertaken between February-August, a pre-construction survey(s) shall be conducted for nesting birds at least 30 days prior to any tree removal. If a nesting bird(s) is detected, the project owner shall consult with the CEC CPM on how to proceed.

6. To ensure the likelihood of successful completion of required mitigation, the applicant shall designate a qualified biologist to advise the project owner or its project manager on the implementation of these Conditions of Certification, and to supervise and/or conduct mitigation, monitoring, and other biology compliance efforts.

~~7. The applicant shall construct, monitor, maintain and evaluate the effectiveness of the Aquatic Filter Barrier.~~

8. Implement a Worker Environmental Awareness Program (see **BIO-4).**

(With elimination of the use of river water for cooling and Aquatic Filter Barrier, the project is no longer required to obtain state or federal resource agency permits)

Verification: At least thirty (30) days prior to the start of any project related ground disturbance activities, the project owner shall provide the CPM with the final version of the BRMIMP for this project, the CPM will determine the plan's acceptability within fifteen (15) days of receipt of the final plans. Implementation details for the above measures shall be included in the BRMIMP.

BIO-6 The project owner will implement the following staff proposed mitigation measure and the project owner shall include them in the BRMIMP submittal. The BRMIMP shall include implementation measures for each of the following protocol measures.

Protocol: The project owner will:

1. Implementation all mitigation, monitoring and compliance conditions included in the Commission's Final Decision;

~~2. implement all terms and conditions contained in the USFWS, NMFS, and CDFG Biological Opinion(s)/Incidental Take Statement(s) or Permit(s) (ESA/2081);~~

~~3. implement all terms and conditions contained in the State Streambed Alteration Agreement;~~

4. build new above-ground transmission lines and connections to reduce the risk of electrocution for large birds;

5. describe in detail the monitoring methodologies, duration, and frequency for each type of monitoring established for mitigation actions;

~~6. describe performance standards to be used to help decide if/when proposed mitigation is or is not successful, including the effectiveness of the Aquatic Filter Barrier;~~

~~7. implement a monitoring and evaluation program that will determine the effectiveness of the Aquatic Filter Barrier. The project owner will determine the effectiveness of the Aquatic Filter Barrier by conducting impingement and entrainment sampling (day and night) for eggs and larvae of fish, for a minimum of six months (including the period February 1 through July 31) following Aquatic Filter Barrier installation and operation. Source water shall be sampled inside and outside the Aquatic Filter Barrier enclosed water area, for eggs and larvae of fish, at the same time as impingement and entrainment (day and night) sampling in order to determine the effectiveness of the Aquatic Filter Barrier. If impingement sampling in the field is infeasible, impingement studies may be conducted in a laboratory setting. The project owner will submit an Impingement and Entrainment Study Plan for CPM approval prior to construction of the AFB. The sampling and evaluation program may be modified as appropriate and approved by the CEC CPM during the evaluation period. Such changes, if any, will be implemented in consultation with the applicable agencies.~~

8. identify all remedial measures to be implemented if performance standards are not met;

9. reduce exterior lighting on all structures to the minimum except for those required for aviation warning, all other required exterior lighting on structures will be shielded to direct light downward;

10. reduce soil erosion during construction and operation by applying mitigations measures identified in the AFC and comply with State Water Resources Control Board/Regional Water Quality Control Board standards;

11. reduce the potential for animals falling into trenches or other excavated sites by covering them at the end of the work day if left unattended, or provide wildlife escape ramps for construction areas that contain steep-walled holes or trenches, and inspect trenches each morning for trapped animals prior to the beginning of construction. Construction will be allowed to begin only after trapped animals are able to escape voluntarily.

12. clearly mark construction area boundaries with stakes, flagging, and/or rope or cord to minimize inadvertent degradation or loss of adjacent habitat during facility construction. All equipment storage will be restricted to designated

construction zones or areas that are currently not considered sensitive species habitat.

13. post signs and/or fence the power plant construction site and laydown areas to restrict vehicle access to designated areas.

~~14. designate a specific individual as a contact representative between the project owner, USFWS, NMFS, Energy Commission, and CDFG, to oversee compliance with mitigation measures detailed in the Biological Opinion.~~

15. provide a post-construction compliance report, within forty-five (45) calendar days of completion of the project, to the ~~USFWS, CDFG, and the~~ Energy Commission.

16. make certain that all food-related trash will be disposed of in closed containers and removed at least once a week. Feeding of wildlife shall be prohibited.

17. prohibit firearms except for those carried by security personnel.

Verification: At least thirty (30) days prior to start of surface disturbing activities at the project site and/or at ancillary facilities, the project owner shall provide the CPM with the final version of the BRMIMP for this project, and the CPM will determine the plans acceptability within 15 days of receipt of the final plan. Within 30 days after completion of construction, the project owner shall provide to the COM for review and approval a written report identifying which items of the BRMIMP have been completed, a summary of all modifications to mitigation measures made during the project's construction phase, and which conditions items are still outstanding.

(With elimination of the use of river water for cooling and Aquatic Filter Barrier, the project is no longer required to obtain state or federal resource agency permits)

~~**BIO-7** Prior to operation of CCPP Unit 8 by itself, the project owner shall provide final copies of the Biological Opinions/Incidental Take Statement(s) or Permit(s) (ESA/2081) obtained from the USFWS, NMFS, and CDFG and the Streambed Alteration Agreement from CDFG and incorporate the terms of the Permit(s)/Statement(s)/Agreement(s) into the BRMIP.~~

~~**Verification:** At least 90 days prior to the start of CCPP Unit 8 operation by itself, the project owner shall submit to the project CPM copies of the final Biological Opinions/Incidental Take Statement(s) or Permit(s) from the USFWS, NMFS, and CDFG.~~

(With elimination of the use of river water for cooling and Aquatic Filter Barrier, the project is no longer required to obtain state or federal resource agency permits)

~~BIO-10 The project owner shall obtain a California Fish and Game Code, Section 1603 Streambed Alteration Agreement as part of the Aquatic Filter Barrier installation and operation.~~

Verification: The project owner will submit copies of the final CDFG Streambed Alteration Agreement(s) to the CPM at least 60 days prior to the start of AFB installation. The project owner shall notify the CPM in writing of any changes to and/or renewal of these permits/agreements at least 30 days prior to the effective date of the change.

(With elimination of the use of river water for cooling and Aquatic Filter Barrier, the project is no longer required to obtain state or federal resource agency permits)

BIO-11 The project owner will submit a workplan that discusses in detail the installation of the proposed Aquatic Filter Barrier (AFB), also known as the Gunderboom. This workplan will identify all principal materials, methods, and equipment that will be used for the installation of the AFB. The workplan will also identify and demonstrate compliance with all LORS associated with the Gunderboom project including the California Fish and Game Code, Section 1602 Streambed Alteration Agreement administered by the California Department of Fish and Game, and any permit required by the U.S. Army Corps of Engineers.

Verification: The AFB workplan will be submitted to the CPM and all other agencies issuing permits for the project at least 90 days prior to the start of AFB installation activities. The workplan will contain copies of all final draft or final permits required for the installation of the AFB, and the Applicant will adhere to all conditions specified in these permits. The project owner will provide a summary report of the AFB installation that details and explains any activities, events, or incidents that deviate from those described in the workplan. The summary report will be sent to the CPM, and all other agencies issuing permits for the project within 30-days of completion of the AFB installation project.

(With elimination of the use of river water for cooling and Aquatic Filter Barrier, the project is no longer required to obtain state or federal resource agency permits)

SOIL & WATER 4: The project owner shall obtain the National Pollutant Discharge Elimination System Permit from the CVRWQCB for the Contra Costa Power Plant prior to operation of CCPP Unit 8. The project owner shall comply with all provisions of the National Pollutant Discharge Elimination System Permit. The project owner shall notify the Energy Commission CPM of any proposed changes to this permit, including any application for permit renewal. Based on the draft NPDES permit conditions, and subject to adoption of the final NPDES permit by the CVRWQCB, the wastewater discharge from Unit 8 could be affected by new, more stringent effluent limitations, primarily as a result of the promulgation of the California Toxics Rule by the USEPA. The San Joaquin River is listed as an impaired water body under the Clean Water Act Section 303(d), meaning that it does not meet ambient water quality standards for several constituents. Until the final NPDES permit is issued, it is unknown at this time how this status will affect the combined wastewater discharge. The project will be required to meet all conditions contained in the NPDEW permit, and will not operate without the permit in place.

Verification: The project owner will provide a copy of the final National Pollutant Discharge Elimination System Permit from the CVRWQCB to the CEC CPM at least 30 days prior to the start of construction. The project owner shall submit to the Energy Commission CPM in the annual compliance report a copy of the annual monitoring report submitted to the CVRWQCB. The project owner shall notify the Energy Commission CPM in writing of any

~~changes to and/or renewal of this permit at least 30 days prior to the effective date of the change~~.

(With the elimination of use of river water for cooling the project has also eliminated its need to discharge to the river and therefore will not be required to obtain an NPDES permit)

~~**SOIL & WATER 5:** The project owner shall obtain the Section 10 Rivers and Harbors permit/authorization from the USCOE as part of the Aquatic Filter Barrier installation and operation.~~

~~**Verification:** The project owner will submit copies of the final USCOE Section 10 Rivers and Harbors permit/authorization at least 30 days prior to the start of AFB installation. The project owner shall notify the Energy Commission CPM in writing of any changes to and/or renewal of the authorization/agreements at least 30 days prior to the effective date of the change.~~

(With elimination of the use of river water for cooling and Aquatic Filter Barrier, the project is no longer required to obtain state or federal resource agency permits)

~~**SOIL & WATER 6:** The project owner will submit a workplan that discusses in detail the installation of the proposed Aquatic Filter Barrier (AFB), also known as the Gunderboom. This workplan will identify all principal materials, methods, and equipment that will be used for the installation of the AFB. The workplan will also identify and demonstrate compliance with all LORS associated with the Gunderboom project to include Section 10 of the Rivers and Harbors Act.~~

~~**Verification:** The AFB workplan will be submitted to the CEC CPM and all other agencies issuing permits for the project at least 90 days prior to the start of installation activities. The workplan will contain copies of all final draft or final permits required for the installation of the AFB, and the Applicant will adhere to all conditions specified in these permits. The Applicant will provide a summary report of the AFB installation that details and explains any activities, events, or incidents that deviate from those described in the workplan. The summary report will be sent to the CEC CPM, and all other agencies issuing permits for the project within 30-days after completion of the AFB installation project, and prior to the start of plant operations.~~

(With elimination of the use of river water for cooling and Aquatic Filter Barrier, the project is no longer required to obtain state or federal resource agency permits)

SOIL & WATER 7: The project owner will obtain a final "will serve" letter, agreement, or contract signed by an authorized agency of the City of Antioch ***or other water purveyor*** that indicates that the City ***or other water purveyor*** has available capacity and will supply the potable water needs of the project. The "will serve" letter, agreement, or contract will contain any conditions, restrictions or requirements related to the supply and/or use of this water by the project. ~~The project owner shall restrict the use of water supplied by the City of Anitoch to potable and sanitary uses. Such water shall be specifically prohibited from being used for such purposes as process wash water, turbine inlet cooling make-up, cooling tower makeup, and other non-potable uses.~~ The project will not operate without a potable water supply in place.

Verification: A copy of the final "will serve" letter and/or signed agreement or contract will be provided to the CPM at least 30 days prior to the start of project operation.

(With the elimination of river water and the installation of an Air Cooled Condenser, the project has minimized its use of fresh water to the maximum extent feasible. However, the project will require some water for industrial purposes. Elimination of the restrictions contained in the Condition of Certification are necessary to facilitate the switch to dry cooling technology while simultaneously eliminating the use of river water.)

~~**SOIL & WATER 9:** The project owner will submit a workplan for a study designed to characterize both the sediment deposition rate and pattern within and in the immediate vicinity of the Sportsmen Yacht Harbor. The workplan will also discuss methods to characterize the rate of deposition of any leaf or other litter associated with the use of trees or other vegetation for visual or other barriers associated with the project, and discuss any landscape maintenance and/or best management capable of reducing impacts to the harbor. All materials, sampling methods, sampling locations, data quality assessment, and use of the data produced shall be discussed in the workplan. The study shall be deisgned to provide information on pre-project (prior to installation of the AFB) and post-project (after the installation of the AFB) sedimentation such that any changes related to the project can be quantified. If adequate pre-project data can not be generated due to time constraints/other reasons, an alternative method of determining project-related impacts should be provided.~~

~~The workplan will include a scheme for compensating the harbor for any project-related increase in maintenance dredging costs. To the extent possible and practicable, the project owner will consult the harbor owner(s) to obtain any available information on the historical maintenance dredging of the harbor.~~

~~**Verification:** The project owner will provice te workplan to the ownwers of the yacht harbor for review and comment, and to the Energy Commission CPM for review and approval at least 60 days prior to start of construction of the AFB.~~

(With elimination of the use of river water for cooling and Aquatic Filter Barrier, the project will no longer affect sedimentation of the harbor.)

GEN-2 *Please replace current Table 1 with the following Table*

Table 1: Major Equipment List

Equipment/System	Quantity Plant	Size/Capacity*	Remarks
Combustion Turbine (CT)			Dry Low NO_X combustion control.
Generator	2	170 MW each	Either train can operate independently
Steam Turbine (ST)	1	200 MW	Single shaft HPT, IPT and LPT (2x1 configuration
Generators	3		Included with CT and ST
CTG Step-up Transformers	2	230-18 kV 129/172/215 MVA, ONAN/ONAF/ONAF	To electrical grid
STG Main Step-up Transformer	1	230-18kV 153/204/255 MVA, ONAN/ONAF/ONAF~~3600000 lb/hr~~	To electrical grid~~1 @ 100%~~
CT Inlet Air Filter	2		
Inlet Air Cooling	2		~~Evaporative/Refrigeration/Fogging~~Inlet Chiller
Air Compressor	3	~~1~~250~~,000 lb/hr~~ cfm	3 @ 50%
Fuel Gas Compressor	1		1 @ 100%
Fuel Gas Filter – Separator	2	~~550~~204,000 lb/hr	
Heat Recovery Steam Generator (HRSG)	2		HP, IP, LP with reheat
HRSG Stack	2		~~18'~~16'-7 1/8" dia.x195' high
Ammonia Injection Skid	2		Two blowers per HRSG
Ammonia Storage Tank	1	20,000 gal	Double walled
HP/IP HRSG feedwater pumps	2	1,700 gpm	HP with interstage bleed
~~Make up~~Fire Water Storage Tank	1	~~2,3~~500,000 gal	Includes~~ firewater~~200,000 gal for service water storage
Service Water Pumps	2		2 @ 100%
Demineralized Water Pumps	2	?? ~~170~~ gpm	2 @ 100%
Demineralized Water Treatment Package	1	~~350~~225 gpm	Trailer-mounted water treatment equipment
Demineralized Water Storage Tank	1	250~~0~~,000 gal	
Condensate Pump	~~2~~3	~~1~~2300 gpm	~~1 spare per condenser~~3 @ 50%
~~Circulating Water Pumps~~	~~3~~	~~60,000 gpm~~	
Condensate Polisher	1	3500 gpm	Powdered resin polisher

~~Cooling Tower Bank~~Air Cooled Condenser (ACC)	1		~~Ten~~Thirty Six-celled ~~mechanical draft design~~ACC
~~Fire Water Pump Skid~~	~~1~~	3,000 gpm	
Fire Water Pumps	2	2,500 gpm	2 @ 100%
Auxiliary Cooling Water Pumps	2	~~75~~8,000 gpm	2 @ 100%
Plant Air Compressor Dryers	2	~~75~~500 cfm	2 @ 100%
Main Unit Auxiliary~~Step-up~~ Transformers	2	18-4.16/4.16 kV H: 27/36/45 MVA, X,Y:13.5/18/22.5MVA,ONAN/ONAF/ONAF~~18/20 kV~~	To MV switchgear~~electrical grid~~

TSE-4 The project owner shall be responsible for the inspection of the transmission facilities during and after project construction and any subsequent CPM approved changes thereto, to ensure conformance with the CPUC General Order 95; Title 8, California Code of Regulations; Article 35, 36 and 37 of the "high Voltage Electric Safety Orders"; ~~the NEC~~; PG&E Interconnection Handbook; CPUC Rule 21 and related industry standards. In case of non-conformance, the project owner shall inform the CPM in writing within 10 days of discovery such non-conformance and describe the corrective actions to be taken.

Verification: Within 60 days after first synchronization of the project, the project owner shall transmit to the CPM:

1. "As built" engineering description(s) and one-line drawings of the electrical portion of the facilities signed and sealed by the registered electrical engineer in responsible charge. A statement attesting to conformance with the CPUC General Order 95; Title 8, California Code of Regulations Articles 35, 36 and 37 of the "high Voltage Electric Safety Orders"; ~~the NEC~~; PG&E Interconnection Handbook; CPUC Rule 21 and related industry standards, and these conditions shall be concurrently provided.
2. An "as built" engineering description of the mechanical, structural, and civil portion of the transmission facilities signed and sealed by the registered engineer in responsible charge.
3. A summary of inspections of the completed transmission facilities, and identification of any nonconforming work and corrective actions taken, signed and sealed by the registered engineer in responsible charge.

(The reference to compliance with the NEC has been removed to reflect that public utility owned generation is exempt from compliance with the NEC.)

APPENDIX 5

List of Property Owners within 1,000 Feet of the Project Site and 500 Feet from the Project Linear Routes

051 031 014
Southern Energy Delta Llc
1350 Treat Blvd #500
Walnut Creek CA 94597

037 020 012
Ei Du Pont De Nemours & Co
Po Box 1039
Wilmington DE 19899

037 040 007
OXFOOT ASSOCIATES LLC
24737 Arnold Dr
Sonoma CA 95476

037 040 015
OXFOOT ASSOCIATES LLC
24737 Arnold Dr
Sonoma CA 95476

051 031 003
STATE OF CALIFORNIA
Po Box 7791
San Francisco CA 94120

051 031 004
STATE OF CALIFORNIA
Po Box 7791
San Francisco CA 94120

051 031 005
GAYLORD CONTAINER CORPORATION
Po Box 1149
Austin TX 78767

051 031 007
STATE OF CALIFORNIA
Po Box 7791
San Francisco CA 94120

051 031 015
PACIFIC GAS & ELECTRIC CO
Po Box 770000
San Francisco CA 94177

051 032 004
Tony Cutino
4030 Saint Marys St
Martinez CA 94553

051 032 005
Tony Cutino
4030 Saint Marys St
Martinez CA 94553

051 032 006
Tony Cutino
4030 Saint Marys St
Martinez CA 94553

051 032 007
Tony Cutino
4030 Saint Marys St
Martinez CA 94553

051 032 009
Roy A Cunha
Po Box 23893
Pleasant Hill CA 94523

051 032 011
John A & Lana S Martinez
3000 Wilbur Ave
Antioch CA 94509

051 032 013
Randy W & Cani L Christ
PO Box 1163
Brentwood CA 94513

051 040 009
Tommy L & Dorothy M Hampton
480 Fleming Ln
Antioch CA 94509

051 040 019
Linda McDaniel
3307 Wilbur Ave
Antioch CA 94509

051 040 023
Lloyd Q Fleming
415 Fleming Ln
Antioch CA 94509

051 040 035
Wallace & Judith Gibson
Po Box 20697
El Sobrante CA 94820

051 040 041
Michael R & Kimberly Wiley
Po Box 670
Oakley CA 94561

051 040 044
STATE OF CALIFORNIA
Po Box 7791
San Francisco CA 94120

051 040 048
Linda McDaniel
3307 Wilbur Ave
Antioch CA 94509

051 040 049
Linda McDaniel
3307 Wilbur Ave
Antioch CA 94509

051 040 056
Michael G & Nancy F McKim
5600 Oak Knoll Rd
El Sobrante CA 94803

051 040 063
John E & Lillian A Whalen
6003 Horsemans Canyon Dr
Walnut Creek CA 94595

051 040 064
Daniel M & Shari D Grady
3361 Pebble Beach Ct
Fairfield CA 94534

051 040 065
SPORTSMEN INC
Po Box 518
Antioch CA 94509

051 040 066
Mechanical Co Monterey
8275 San Leandro St
Oakland CA 94621

051 040 069
Trailer Storage Antioch
2120 American Canyon Rd
American Canyon CA 94503

051 040 070
Virginia H Fleming
415 Fleming Ln
Antioch CA 94509

051 040 071
Trailer Storage Antioch
2120 American Canyon Rd
American Canyon CA 94503

051 040 072
WILBUR AVENUE LLC
PO Box 31114
Walnut Creek CA 94598

051 040 073
KIEWIT CONSTRUCTION GROUP INC
3555 Farnam St #1000
Omaha NE 68131

051 051 015
Norman P Jr & Edith Olsen
1308 W 7th St
Antioch CA 94509

051 051 018
Thomas M Oneil
333 Chardonnay Cir
Clayton CA 94517

051 051 019
Frank C Sr & Helen Alegre
2000 Edgewood Dr
Lodi CA 95242

051 051 021
GWF POWER SYSTEMS COMPANY
4300 Railroad Ave
Pittsburg CA 94565

051 051 023
Delta Diablo Sanitation Dist
2500 Pittsburg Antioch Hwy
Antioch CA 94509

051 051 024
Delta Diablo Sanitation Dist
2500 Pittsburg Antioch Hwy
Antioch CA 94509

051 052 007
Frank D & Jo Ann Evangelho
897 Oak Park Blvd #288
Pismo Beach CA 93449

051 052 008
City of Antioch
Po Box 5007
Antioch CA 94531

051 052 049
Kenneth P Jr Graunstadt
1371 Main St
Oakley CA 94561

051 052 053
SANDY LANE PROPERTIES
361 Sandy Ln
Oakley CA 94561

051 052 056
GAYLORD CONTAINER CORPORATION
Po Box 1149
Austin TX 78767

051 052 096
ANTIOCH CITY OF
Po Box 5007
Antioch CA 94531

051 052 099
Stamm-Balocco Storage Llc
Po Box 633
Antioch CA 94509

051 052 100
City of Antioch
Po Box 5007
Antioch CA 94531

051 052 101
BELLECCI FAMILY
4030 Saint Marys St
Martinez CA 94553

051 082 003
John M & Bea Wadkins
1473 Walnut Ave
Antioch CA 94509

051 082 004
Johnny W & Alice I Strawther
1957 Santa Fe Ave
Antioch CA 94509

051 082 005
James Jr & Marcilynn Kennard
1915 Santa Fe Ave
Antioch CA 94509

051 082 010
SANDY LANE PROPERTIES
361 Sandy Ln
Oakley CA 94561

051 082 011
Brian & Kimberly Bogart
1939 Santa Fe Ave
Antioch CA 94509

051 250 001
STATE OF CALIFORNIA
Po Box 7791
San Francisco CA 94120